

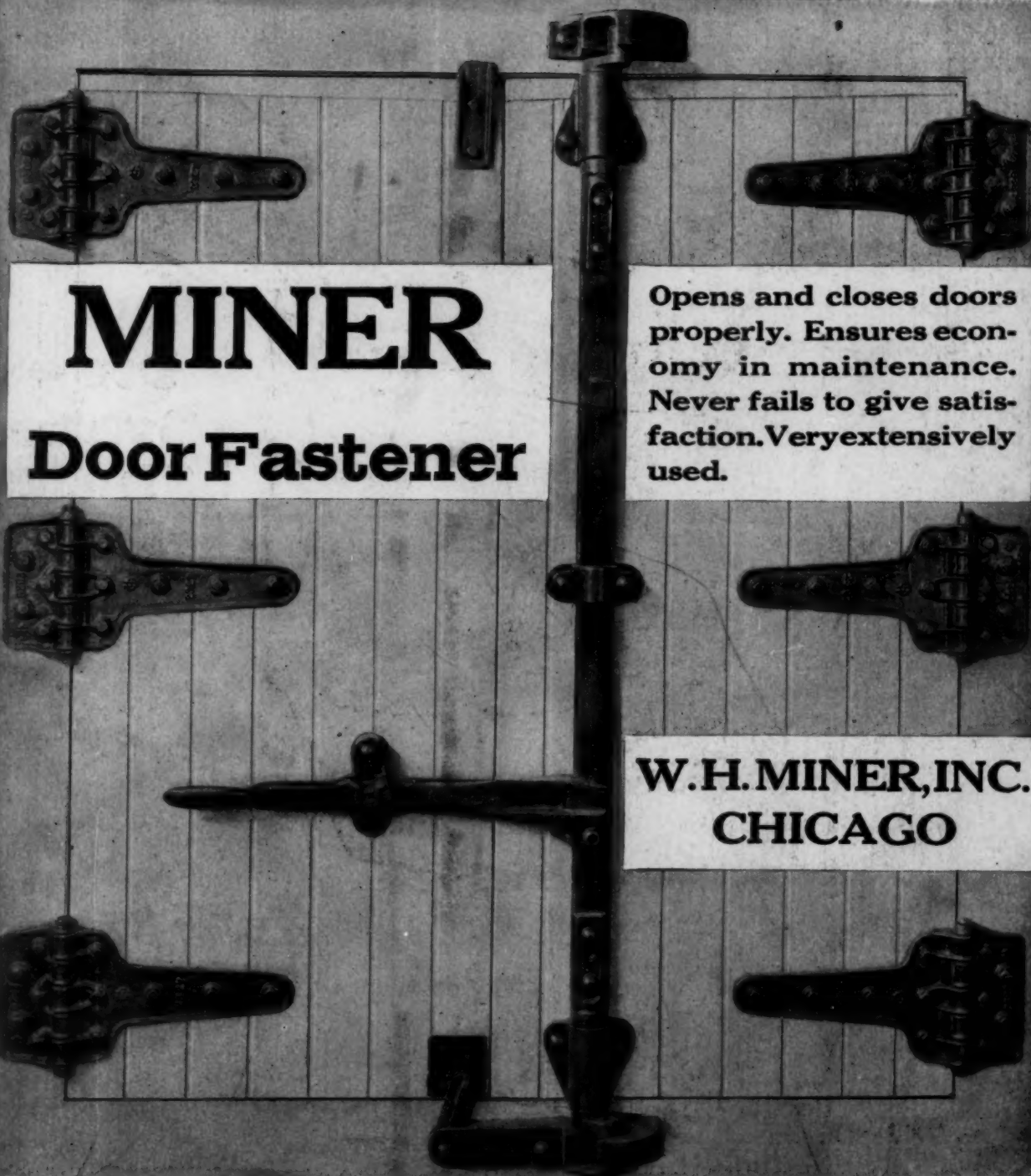
# Railway Age

**DAILY EDITION**

FIRST HALF OF 1924, No. 35 NEW YORK—WEDNESDAY, JUNE 18, 1924—ATLANTIC CITY

SIXTY-NINTH YEAR

Published Weekly by Simmons-Boardman Pub. Co., 30 Church St., New York, N. Y. Subscription Price U. S., Canada and Mexico, \$6.00; foreign countries (excepting daily editions), \$8.00, and \$10.00 a year including all dailies; single copies, 25c. Entered as second-class matter January 30, 1918, at the post office at New York, N. Y., under the act of March 3, 1879.



The advertisement features a central image of a door with vertical wooden planks. A heavy-duty metal fastener, the MINER Door Fastener, is shown installed on the door. The fastener consists of a vertical rod with a handle at the top and a base at the bottom. Two large, ornate metal latches are mounted on the door, one on each side of the fastener. The fastener is shown in a closed position, with the handle and base aligned vertically. The background is a dark, textured surface.

**MINER**

**Door Fastener**

Opens and closes doors properly. Ensures economy in maintenance. Never fails to give satisfaction. Very extensively used.

**W.H. MINER, INC.**  
**CHICAGO**

# Ureco

Wheel can be  
dropped flush  
with floor

High powered

Drop  
Brake  
Shaft



**Union Railway Equipment Co.**  
**McCormick Building**  
**Chicago**



# Railway Age

DAILY EDITION

Copyright, 1924, by the Simmons-Boardman Publishing Company.

VOLUME 76

JUNE 18, 1924

NUMBER 35

PUBLISHED EVERY SATURDAY AND DAILY EIGHT TIMES IN JUNE BY THE  
SIMMONS-BOARDMAN PUBLISHING COMPANY,  
30 CHURCH STREET, NEW YORK

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Entered at the Post Office at New York, N. Y., as mail matter of the second class.

Subscriptions including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign countries, including daily editions published in March and June, \$10. Foreign countries, not including daily editions, \$8.00. Foreign subscriptions may be paid through our London office in £. s. d. Single copies, 25 cents each.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Oftentimes there is a tendency to characterize an event as the best ever, or more than ordinarily successful, if it comes up to the average or is devoid of unseemly happenings. With this introduction we hasten to emphasize the fact that the present convention is not in this class, but is really extraordinarily successful. The technical programs have been exceptionally strong and the discussions, particularly in Division V, have been more constructive and carefully prepared than at any previous convention. The convention hall has been filled to its capacity at all times and a really unusual interest has been manifested in the proceedings. Records as to registration, particularly of railroad officers and special guests, who are largely railroad men, have broken all records—broken them so thoroughly and completely as to leave no question about it. There are more exhibitors, more exhibit space and more new and novel features in the exhibit by far than ever before. If there has been any discouraging feature about the convention it has been that there has been so much which is really worth seeing and so little time in which to see it. The exhibitors are enthusiastic about the

### An Outstanding Success

interest that has been shown in their devices. Not a single discordant note has reached the *Daily*, but we have received enthusiastic expressions from all sides and from all concerned. One of the inspiring features was the presence at the meetings of President Aishton and Vice-President Besler, of the American Railway Association, and a considerable number of the higher executive officers.

Uniformity is the watchword in all kinds of fusion welding. Sound welds can be had consistently when the

### Fusion Welding

performance of the operator is uniform, when the welding material used is correct and of uniform quality, and the best method of procedure is rigidly adhered to. The Mechanical Division is to be congratulated on the progress it is now making in the field of fusion welding. The report on specifications and tests for materials presented on Monday contained proposed specifications for welding wire and rods which were prepared in co-operation with representatives of the American Welding Society. These specifications, as they should be, are a step toward the establishment of uniformity of material, yet not so binding as to restrict progress in the art of welding. The American Welding Society has also prepared a fund of valuable information on the training of operators, and this is available for use by those who wish to take advantage of it. At a meeting conducted by the Welding society on yesterday afternoon its services were offered to the Mechanical Division. The Association of Railway Electrical Engineers is now preparing a manual on methods of procedure. This will undoubtedly prove to be a tremendous task requiring much time. When it is completed, however, it will be of great value for electric welding as applied to railroad work. To the uninitiated these several activities may appear as unnecessary complications, but it is only by everyone putting his shoulder to the wheel that the work will be done. Proper co-ordination will prevent duplication of effort, and the inevitable result will be that the railroads can avail themselves of the full advantages offered by the use of fusion welding. The several associations should work together.

The prompt, accurate and economical delivery of material is rapidly becoming recognized as an underlying

### The Delivery of Material to Shops

factor in the speeding up of shop production with a consequent reduction in costs. This recognition has led to the development of systems for handling the material independently of the activities of the regular shopmen, such as machinists, mechanics, car repairmen and others of similar occupations. On some roads this development has been under the jurisdiction of the mechanical department, but on many others it has become the function of the stores department. This latter arrangement is more logical because of its greater possibilities for a lower total handling cost. That this belief is gaining ground rapidly is well evidenced by the report of the Committee on Stores Delivery of Material, where it is shown that out of 34 roads replying to a questionnaire on the subject, 30 roads favored stores delivery. Among other interesting facts in this report is a tabulation showing the comparative time consumed per 1,000 men employed for the delivery

of material. The average result for 15 roads showed that there was a saving of 96 hours per day per 1,000 men employed by utilizing the stores delivery of material over that of allowing mechanics or helpers to call for material. This is a definite saving which translated in man-days means the turning of 12 men's labor from unskilled work to skilled work and to that for which they are paid. In conjunction with the report there was a motion picture showing in detailed form the actual practice of stores delivery on the Southern Pacific. No one who was fortunate enough to see this picture, visualizing, as it did, the amount of time which is wasted by allowing shopmen to call for material in contrast to the smoothness and efficiency of a well-organized stores delivery, could fail to be impressed with the possibilities of the latter.

With operating officers continuing to demand still more powerful locomotives, capable of hauling increasingly

#### Keep the Weight Down

heavier trains, and engineering departments contending that the great weight of modern locomotives and cars is making it necessary to lay heavier rails, build stronger bridges and increase greatly all expenditures for maintenance of way, it is well to consider whether the weight of a locomotive and its separate parts is absolutely required for the work which they perform. It is an encouraging sign that the importance of this problem is being recognized by mechanical men. In two papers already presented, namely, the one on the three-cylinder locomotive and the one on the stresses in track produced by modern locomotives, the part that those responsible for locomotive design must take to improve present conditions was clearly brought out. Nothing can be gained by the locomotive man taking the position that it is the duty of the engineering department to provide such track and structures as may be necessary to carry the heaviest locomotive which can be built to handle the heaviest trains considered desirable by the traffic department. Neither will the problem ever be more than partially solved by the engineering department insisting that the sole responsibility rests on the mechanical department. The problem is a joint one and fortunately is being so considered. Both departments must do all possible in their own fields. The importance of counterbalancing locomotives is one that has been recognized for years and while not overlooked, the possibilities obtainable by the use of special steels and suitable heat treatment now available can not be too strongly stressed. Better engineering knowledge and new alloy steels make it possible to do today that which was impossible only a few years ago. Furthermore, a wide field of possibilities in weight reduction is being opened up by the three-cylinder locomotive with its greater power per unit of weight, lower factor of adhesion, more even tractive force, better counterbalancing and increased steaming capacity.

Some car owners are inclined to be exceedingly technical in demanding defect cards under Rule 32 for small defects which are of little importance

#### Arbitration Cases Under Rule 32

so far as their effect on the serviceability of the car is concerned. Even in cases where the damage is serious many claims are made which cannot be substantiated under the rule, and this misapprehension of the intent of the rule, as it is interpreted in almost every

case by the Arbitration Committee, is the cause of more controversies than almost any other rule in the interchange code. As interpreted by the Arbitration Committee and, indeed, as the text of the rule clearly indicates, the burden of proof in questions of responsibility lies upon the owner of the car. He must establish beyond a reasonable doubt the truth of his contention that the conditions for which the handling line is held responsible apply if he expects to secure a favorable decision in cases appealed to the Arbitration Committee. There are, no doubt, some car owners who feel that this is unfair. It must be remembered, however, that cars are built for service, and that service cannot be rendered without deterioration. Furthermore, equipment must be built to withstand modern conditions, or the effect of ordinary service will inevitably be the actual damage of the structure. The whole purpose of the Car Construction Committee in the development of the fundamentals of design which have been adopted by the Mechanical Division has been to establish the strength of cars on such a plane that they will withstand modern service requirements. If, then, the principle by which the Arbitration Committee guides its course were reversed and the burden of proof placed on the handling line, the results would be far more unfair than they are now. The handling line would be held responsible for failures of many weak cars not fit for modern conditions, whenever the owner could find evidence to justify him in the faintest suspicion that the conditions of unfair handling stated in Rule 32 might apply. If the will of the Mechanical Division with respect to the strength of equipment is not to be blocked by minority members, the Arbitration Committee must continue to maintain its present attitude toward Rule 32 cases.

The Railway Accounting Officers' Association has given special attention to getting the best work from its various

#### Making Conventions More Productive

committees and conducting its conventions efficiently. One great problem of all live railway associations has been to provide ample time for the consideration and discussion of committee reports. An interesting innovation made by the Accounting Officers' Association a few years ago may be worthy of consideration by the Mechanical Division. It has been the practice of the R. A. O. A. to keep its members fully informed as to the progress made by the committees during the year, through bulletins which are issued from time to time; these contain reports of committee meetings and activities. The final committee reports are included in an agenda, which is sent to the association members well in advance of the time of meeting. The important feature, however, is that the committees meet on the day prior to the beginning of the annual meeting. All association members are notified of the exact time and place of these meetings and are invited to attend them for the purpose of asking questions or of discussing various phases of the report in which they may be especially interested. As a matter of fact, the report of the committee is usually discussed in great detail. If, in the light of such discussion, it is found advisable to make any changes in the report, they are prepared in the form of supplementary agenda and presented to the members attending the convention in mimeograph form. This procedure has been found to give excellent results; the discussion before the convention is expedited and held to a minimum, and yet without any danger of overlooking points which require discussion. One evidence of the advantages of these practices was clearly indicated at the last meeting of the



association which was held in Richmond, Va. Although the Committee on Freight Accounts reported on 77 subjects and the report itself required 114 pages of the agenda, adequate discussion of all of this material before the convention required only three or four hours.

While the demand for greater locomotive capacity during recent years has largely been met by increases in size and weight, considerable has been accomplished in the direction of increasing the efficiency of the boiler plant.

**Increased Thermal Efficiency Probable**

The absolute necessity of boiler capacity is too generally recognized to require emphasis. Future conditions will demand not only greater power per unit of weight, but an appreciable increase in the over-all thermal efficiency of the complete locomotive power plant. This will mean improvements in boiler design which may result in an increase in steam pressures and possible radical changes from the present type of locomotive boiler. Already a considerable number of water-tube locomotive boilers are in use in Europe and a few in this country, including one recently built. At least one other interesting boiler with a water-tube firebox will doubtless be in service before the next convention. Possibilities in this direction should be given thorough investigation. Fuel will doubtless continue to decline in quality and relatively larger fireboxes with lower rates of combustion may be expected. Longer runs and better utilization of the locomotive will bring about a demand for an improvement in grate design. More efficient draft appliances also are desirable. While much may be anticipated along the line of more economical generation of steam, there is room for decided improvements in the utilization of the steam. This involves greater expansion, lessened clearances, better steam distribution, and a decrease in back pressure. A return to the compound in a considerably improved form is well within the range of possibilities in the comparatively near future. Of one thing we may rest assured; that is, the fact that the steam locomotive has by no means reached the height of its development as a reliable and also an efficient power plant.

One of the difficulties that has been encountered by the railroads operating in Canada and in the northern part of the United States has been the maintenance of the present type of foundation brake gear.

**Foundation Brake Gear Maintenance**

Bottom rods and levers extending below the brake beam are many times torn off when the car is derailed or when running through heavy snow or ice. The earlier form of brake gear had the bottom rod located above the spring plank and the live truck lever located on the outside of the truck, in such a manner that the top pull rod passed over the top of the truck bolster. There were, however, a number of disadvantages in the earlier form that finally led the A. R. A. to adopt the present form of foundation brake gear. The class of leverage used was unsatisfactory in obtaining proper brake shoe contact, for in many cases the shoe did not come in contact with the wheel at all and the arrangement of the brake beam was such that it could not readily adjust itself so as to permit complete contact of the shoe with the wheel, in case it hung below the wheel center. Some of the disadvantages of the present type of brake gear were brought out at the recent convention

of the Air Brake Association, held at Montreal, Que. The fact that low hanging bottom rods and levers are expensive to maintain on cars operating in Canadian and on northern lines in the United States, was one of the points of the earlier type of foundation brake gear. Its simplicity and easier maintenance were the strong arguments brought forward in its favor. This design has been revived in certain localities and has been applied, with modifications, to locomotive tenders and cars of large capacity used in heavy grade service. Considerable difficulty has been experienced particularly with the bottom rod in getting the proper height. The possibilities of more economical maintenance which this type offers are sufficient to justify the Mechanical Division in investigating its merits and possibilities.

When a railroad company asks the machine tool manufacturers for bids, a brief specification is furnished outlining the most important requirements that the tool must meet.

**Wanted—A Special Tool Expert**

For example, if the shop requires an 18-in. lathe, the railroad's specification reads approximately as follows: "One engine lathe, 18-in. swing, 12 ft. bed with geared head for single pulley belt drive, Smith & Jones or equal, complete with taper attachment and countershaft." This specification is usually sent to eight or ten manufacturers, who submit their bids accompanied by complete detailed specifications, line drawings showing the construction and photographs of the machine. As soon as the railroad purchasing agent receives all of the manufacturers' bids and specifications, he makes a brief tabulation of the prices asked and forwards this statement together with all the specifications and descriptive matter to the chief mechanical department officer, who is required to make a selection of the particular bid that meets with his approval. Sometimes the specifications are submitted to the consideration of a machine tool committee composed of various mechanical officers and the final selection is made in accordance with the judgment of this committee. One railroad has the assistant purchasing agent sit in at all machine tool committee meetings. Few shop officers have ever made any particular study of machine tool design or requirements. They have not gained their promotions through their knowledge of machine tool construction and what they do know has been picked up by more or less prolonged observation of machine tool operations, frequently confined to tools that were purchased ten or twenty years ago. A special man, preferably one with a technical education and machine tool building experience, would be of great value to any railroad. Talent of this kind would insure a wise selection of tools and a better adaptation of the tools to the work—the resulting saving would be a considerable item on the average railroad.

President Aishton of the American Railway Association presented some very striking figures regarding railway

**Railway Purchases and Publicity**

purchases in his address before the Purchases & Stores Division on Monday. He showed that the railroads in 1923 bought fuel materials and supplies to the value of \$1,739,000,000, including 28.4 per cent. of the bituminous coal produced, 5.2 per cent. of the anthracite, one-fifth of the fuel oil, 15 per cent. of all the forest products, a very large part of the iron and steel products, etc. A very large part of the industries of the country are di-

rectly and indirectly dependent for their business upon the railroad industry. When railroad buying sharply declines they suffer adversity. When it increases they enjoy prosperity. Unfortunately, many men in other lines of business do not realize to what an extent their prosperity is determined by railway purchases. Purchasing agents are an excellent channel through which this matter may be brought to their attention. As President Besler of the Central of Jersey said in his address to the Purchases & Stores Division, "Your ramifications reach a wide circle of producers whose interests may be very greatly injured by adverse legislation." He pointed out that other large concerns and industries circularize their patrons upon matters of mutual interest and emphasized the desirability of the railways doing this through their purchasing departments. This has been done to some extent recently and there is no doubt that it had a wholesome effect in creating sentiment that influenced the attitude of many members of Congress on proposed railway legislation. The struggle over the railways question is by no means ended. Those who desire to destroy private ownership are well organized, resourceful and determined. They are flooding the country with anti-railroad propaganda and Mr. Besler did well to call attention to the way in which the purchasing departments can help in counteracting this propaganda and in creating sentiment for fair regulation.

Close co-ordination between the stores department's estimate of future requirements and the shop schedule is an essential factor in railroad shop management. A shop schedule should be complete enough so that it can be used in the requisitioning of material. It is expensive for the stores

department to carry an excessive amount of stock that has been ordered to meet future requirements, which many times never develop. There have been instances where the stores department has cut a requisition because the material ordered was considerably in excess of what had been used previously. This has sometimes placed the maintenance of equipment department, as well as the operating department, in an embarrassing position. No department can afford to forget the main function of a railroad, namely, transportation. Too often a department is apt to assume certain functions to the detriment of the other departments, and the policy of cutting requisitions according to past performance is not an economical one. Many roads have not developed a scheduling system which is sufficiently reliable to use for estimating future requirements. On the other hand, it is not always wise to order only such material as is required for specific work which the shop has been authorized to do at once. A delay in deliveries will hold up the work of production. There must be some accurate basis on which to estimate future requirements. The general trend of business conditions is known to the executive officers and a schedule should be made out, if at all possible, far enough in advance so that it can be studied and approved in sufficient time to permit the shop to go ahead with the work. The handling of material is properly a function of the stores department and the using of it belongs naturally to the mechanical department. However, the ordering of material is properly a function of both departments and their efforts should be co-ordinated. When both departments co-operate in this way the mechanical department should base its estimates on a shop schedule, carefully planned and approved.

#### Control of Material Expense

## Today's Program

**T**HE PURCHASES AND STORES and the Mechanical Divisions will hold their last sessions today.

### Purchases and Stores Division

This Division will meet in the Vernon Room of the Haddon Hall Hotel. The program is as follows:

Presentation and discussion of Reports on:  
9:00 a.m. Special Subject, "Duties and Opportunities of a Traveling Storekeeper," by W. W. Williams, traveling storekeeper, New York Central Railroad (West).  
9:30 a.m. Subject 11, Unit Piling of Materials and Numerical Marking System.  
10:00 a.m. Subject 12, Purchasing Agents' Office Records and Office Organization.  
10:45 a.m. Subject 3, Reclamation and Conservation of Discarded Material and Classification of Scrap.  
11:15 a.m. Subject 2, Classification of Material.  
11:30 a.m. Subject 9, Joint Committee on Fuel Conservation.  
11:45 a.m. Subject 10, Joint Committee on Joint Inspection of Standard Material.  
12:00 m. Subject 7, Workable Rules for the Carrying Out of the Provisions of Section 10 of the Clayton Anti-Trust Act.  
12:15 p.m. Reports of Resolutions and Memorials Committees.  
12:30 p.m. Report of Nominating Committee and Election of Officers.

### Mechanical Division

The meetings of this Division will be held in the Convention Hall on the Million Dollar Pier. The program follows:

Discussion of Reports on:  
Autogenous and Electric Welding.  
Brakes and Brake Equipment.  
Wheels.

### Entertainment

10:30 a.m. Orchestral Concert, Entrance Hall, Million Dollar Pier.

## Enrollment Today

**T**HE ENROLLMENT BOOTH will be open today from 9:00 A. M. to 11:00 A. M.

## Yesterday's Entertainment

**T**UESDAY'S ENTERTAINMENT features included the usual orchestral concert in the entrance hall of the pier at 10:30 a. m., concert with impromptu dancing at 3:30 p. m., and tea at 4.30 p. m. The event of the evening was the grand ball at 9:30 p. m. in the pier ball room. The grand march was led by A. W. Munster, vice-chairman Division VI, Purchases and Stores, with Mrs. Armstrong, and C. W. Beaver, president Railway Supply Manufacturers' Association, and Mrs. Beaver. Others in the front of the line were present and past officers of the several associations represented on the pier. Following the grand march the floor was promptly filled and dancing enjoyed by many couples to a late hour.

Marking, as it does, the close of social occasions and entertainment features, the grand ball was the greatest social event of the convention series in point of numbers in attendance, both participants and onlookers. The sub-committee of the entertainment committee in charge, under the direction of Geo. T. Cooke, chairman, was composed of Stanley L. Bateman, R. J. Himmelright, Langley Ingraham, L. J. McCombs, N. C. Naylor, Leslie R. Pyle, Jos. A. Renton, S. Worcester Sargent, F. E. Symons, Fred. W. Venton and W. M. Wilson.



# American Railway Association— Division V

Program Devoted Entirely to Committee Reports;  
Five Car Subjects Presented and Discussed



**T**HE FIFTH SESSION of the Mechanical Division Convention was called to order by the newly elected chairman, J. J. Tatum, at 9:45 a. m.

The program for the day was made up entirely of

committee reports. These were on the following subjects: Prices for Labor and Material; Arbitrations; Tank Cars; Loading Rules, and Safety Appliances. These were taken up in the order given.

## Report on Prices for Labor and Materials

The changes in rules affecting labor, material and new equipment recommended in the report of the committee are made as a result of unsettled labor and material markets and go into effect July 1. Labor and material prices will be investigated again in October, and if sufficient changes are noted the committee plans to make another revision to be inserted in the 1924 code.

An important feature of this year's report is the proposed revision of Inter-



A. E. Calkins  
Chairman

pretation No. 1, Rule 105, by means of which 15 per cent is added to the factory price of manufactured articles not subject to competitive prices and not included in Rule 101 when being charged under this rule. The purpose of this revision, as outlined by the committee, is to make proper compensation to the repairing road, facilitate billing and give the owning road a reasonably accurate method of determining the fairness of the charge.

As indicated in the third paragraph of our report to the 1923 annual meeting, and in conformity with action taken at our New York meeting on November 8, 1923, your committee submits the following recommended changes in the rules affecting labor, material and new equipment for incorporation in a Supplement to the Rules, to be effective July 1, 1924.

The unsettled labor and material markets justify the course of action laid down by your committee in this respect, in order that the allowances established may be more nearly commensurate with the actual average costs incurred by repairing roads throughout the year.

The costs of new equipment in Rule 112 for the first six months of any year are necessarily those of the second year preceding

because of the fact that such data can only be collected annually and four months are required for tabulation. Therefore, the issuance of a supplement July 1 of each year, embodying the new equipment costs in Rule 112 for the preceding year, has come to be a matter of necessity.

As many price changes occurred in Rule 101 other than air brake materials, it is proposed to embody in the July 1 Supplement a complete list of the existing and changed prices of all Items 103 to 214, inclusive, to facilitate the work of bill clerks and others dealing with them.

Special attention is respectfully directed to the proposed revision of Interpretation No. 1, Rule 105, authorizing the addition of an arbitrary of 15 per cent to the factory price of manufactured art-

icles furnished by repairing road which are not subject to competitive prices and which are not included in Rule 101, when being charged under this rule. This will compensate the repairing road, facilitate preparation of bills and enable owning roads in most cases to determine the consistency of the charge, as the majority of such articles can be purchased by all roads at the same price, f. o. b. factory, according to the experience of the committee.

Rule 101, first paragraph, will hereafter stipulate how the material prices are constructed.

All prices for labor and materials represent averages of quotations from roads in north, east, south and west zones, and new equipment prices in most cases are those set up by the President's Conference Committee which in turn secures quotations on total output of practically all the large car manufacturers in the country.

It is the intent of your committee to investigate labor and material costs again in October and if sufficient change develops, necessary revision will be made and inserted in the 1924 code.

### Changes Recommended in the Interchange Rules

For the July 1 Supplement, your committee recommends the following changes in A. R. A. Interchange Rules 98, 101, 105, 107 and 112 of the freight car code and Rules 21 and 22 of the passenger car code:

#### RULE No. 98

*Proposed Form:*—Rule 98 (d). The price for new wrought steel wheels shall be based on scrap value of \$3.00 for metal inside the condemning limit, which is  $\frac{3}{4}$  in. from measuring point, as shown by the A. R. A. Steel Wheel Gage or its approved equivalent, plus \$1.30 for each 1-16 in. of service metal (on radius of tread) in connection with standard full flange contour.

*Note:*—The limit of wear groove is obsolete for measurement of service metal in wrought steel wheels.

Rule 98 (f). In the case of delivering line defects: When repairs are not covered by defect card, the proper credit for any loss of service metal must be given the owner at the rate of \$1.30 for each 1-16 in. of service metal removed, measured on radius of tread, in connection with full standard tread and contour with witness groove left in flange; charge shall be made against owner for any increase in service metal due to application of other wheels. The amount of service metal available shall be measured on back face of rim, using the A. R. A. steel wheel gage or its approved equivalent.

#### RULE No. 101

*Proposed Form:*—Bills for repairs made under these rules and for material furnished shall be in conformity with schedule of prices and credits for the articles enumerated below. *These material prices include storeroom expenses, interest on stock investment, transportation charges and, where involved, local manufacturing labor.*

The arduous and responsible duties of the Arbitration Committee in answering questions and interpreting the Rules of Interchange are well known. Moreover, the committee must pass on the many suggestions for changes in the rules made by railroad clubs and car foremen's associations, giving these suggestions careful consideration before formulating recommendations to the Mechanical Division. The extent of the work during the past year is indicated by the fact that 45 cases were decided and reports sent to the members. The com-

During the year Cases 1287 to 1332, inclusive, have been decided and copies sent to the members. A copy of these decisions is made part of this report. A vote of concurrence in the decisions is respectfully requested by the committee.

The committee wishes to again call your attention to the fact that

Item No.	ARTICLE	PRESENT		PROPOSED		
		8 in.	10 in.	8 in.	10 in.	
	AIR BRAKE EQUIPMENT:					
14	Centrifugal dirt collector, 1 in., complete...	\$1.88	\$1.88	\$1.88	\$1.88	
15	Centrifugal dirt collector, 1½ in., complete.	2.36	2.36	2.36	2.36	
39	Pressure retaining valve, two position, single weight type, average credit.....	.80	.80	.32	.32	
41	Pressure retaining valve, three position, double weight type, average credit....	3.45	3.45	1.73	1.73	
43	Pressure retaining valve, single spring type, two position, average credit.....	1.60	1.60	.64	.64	
46	Release valve, R & R or R.....	1.20	1.20	1.20	1.20	
57	Triple valve, complete, K1 or K2 Standard.	31.50	31.50	31.40	31.40	
Other air brake material is to be charged in accordance with Rule 105 rather than at catalog prices as formerly.						

[The committee here lists other material such as bolts, castings, couplers, pipe, wheels and axles, the proposed changes in prices being generally downward.—Editor]

#### RULE No. 105, INTERPRETATION (1)

Q.—Does the "current market price" refer to price at factory or net store department cost, including factory price and freight charges?

A.—It refers to the net store department cost, which should be obtained by adding to the factory price 15 per cent to cover store expense, interest on stock investment, commercial and deadhead freight haul. (When covered by catalogue, the catalogue price less discount should be considered as the factory price).

#### RULE No. 107

*Proposed Form:*—The labor charges in this rule, as well as Rules 98, 101 and 111, in addition to including the actual labor cost of performing the work, include the following items of indirect expense:

[The committee here gives a list of operations involving little change in the present and proposed hours under Rule 107 including seven new items and with several omissions. Recommended changes under Rule 112, passenger car Rule 21 and passenger car Rule 22 are also included, some reductions and some increases being proposed to adjust these prices to present market conditions.—Editor]

This report is signed by A. E. Calkins, chairman, superintendent rolling stock, New York Central; Ira Everett, chief car inspector, Lehigh Valley; J. K. Watson, materials supervisor, Atchison, Topeka & Santa Fe; E. H. Weigman, supervisor A. R. A. interchange and accounting, Louisville & Nashville; T. J. Boring, general foreman, M. C. B. Clearing House, Pennsylvania System; H. H. Harvey, general foreman, Chicago, Burlington & Quincy; H. H. Boyd, assistant chief mechanical engineer, Canadian Pacific; A. E. Smith, vice-president, Union Tank Car Company; and H. W. L. Porth, superintendent car department, Swift & Company.

#### Discussion

John Purcell (A. T. & S. F.): I move that the report be adopted and made effective July 1.

(The motion was duly seconded and carried.)

## Report of Arbitration Committee

mittee again stresses the fact that no questions will be considered regarding the Rules of Interchange unless submitted in the form of arbitration cases under Rule 123.

One of the important changes recommended by the committee in this year's report is the modification of Rule 106, whereby five paragraphs in the present form are eliminated and provision made for labor and material prices in effect at the time repairs are completed to be chargeable. This is considered a more just practice which will simplify the billing.

it will not consider questions under the Rules of Interchange, unless submitted in the form of arbitration cases as per Rule 123.

#### Freight Car Rules

All recommendations for changes in the Rules of Interchange



submitted by members, railroad clubs, private car owners, etc., have been carefully considered by the committee and, where approved, changes have been recommended.

### RULE 3

The committee recommends that the effective date of the second paragraph of Section (b) be extended to January 1, 1926, the paragraph to be modified in accordance with proposed form shown below:

*Proposed Form:* After January 1, 1926, cars equipped with couplers having riveted yoke without lugs, where such yokes are riveted directly to the coupler, will not be accepted in interchange.

The combination form of yoke with the ends riveted to cast steel yoke head, which is keyed to the coupler, is an exception to the intent of this rule.

Upon recommendation from the Bureau of Explosives, the committee recommends that Section (e) of this rule be modified as follows:

*Proposed Form:* (e) Tank cars, the safety valves or tanks of which are due for test within 30 days, will not be received from owners.

Tank cars (empty or loaded), will not be accepted in interchange unless they comply with the A. R. A. tank car specifications, with the following exceptions:

Loaded tank cars tendered for shipment must be inspected by the carrier before acceptance, to see that they are not leaking; that the air and hand brakes, journal boxes, trucks and safety appliances are in proper condition for service; and that the car has been tested within limits prescribed by American Railway Association specifications for tank cars. Safety valves on tank cars must not be tested while these cars are loaded. Whenever the test of safety valve or tank is due on a loaded car while in transit, unless the car is leaking or in a manifestly insecure condition, it must be forwarded to destination carded on both sides as follows:

- (1) When loaded with dangerous articles—

Safety Valve } overdue for test.

Tank

Moving under I. C. C. 402.

Prompt report of such movements, showing initials and number of car, must be made by railroads carding the cars to the Chief Inspector, Bureau of Explosives, 30 Vesey Street, New York City.

- (2) When loaded with non-dangerous articles—

Safety Valves } overdue for test.

Tank

Moving under A. R. A. Interchange Rule 3, Section (e).

- (3) Empty tank cars when consigned to owner or lessee for test of tank.

Safety Valves } overdue for test.

Tank

Moving under A. R. A. Interchange Rule 3, Section (e).

To comply with regulations governing the handling of explosives and other dangerous articles by freight.

The committee recommends that the effective date of Section (i) be extended to January 1, 1926, and that the section be modified as follows:

*Proposed Form:* (i) After January 1, 1926, cars will not be accepted from owners unless equipped either with steel underframe, wooden or metal draft arms extending beyond the body bolster, or metal draft arms extending to metal body bolster and securely riveted to same.

These restrictions should apply to heavy as well as light capacity cars.

The committee recommends that the effective date of the second sentence of Section (1) be extended to January 1, 1926, as follows:

*Proposed Form:* (1) All flat cars that can be used for twin or triple shipments of lading, built after January 1, 1918, must have side stake pockets spaced minimum 2 ft. 0 in. and maximum 4 ft. After January 1, 1926, no flat car that can be used for twin or triple shipments will be accepted in interchange unless the side stake pockets are so spaced.

The present situation justifies this extension.

The committee recommends the addition of a new section to Rule 3, to be designated as Section (q), as follows:

On and after January 1, 1926, no car will be accepted from owner unless equipped with an efficient auxiliary device for supporting brake beam in case of failure of brake hanger or hanger support.

Numerous accidents are due to failure of brake beam attachments and there should be a requirement in the rules to provide for some auxiliary support.

The Arbitration Committee will also recommend to the Committee on Car Construction that it define what constitutes an efficient auxiliary device and manner of application.

The committee recommends the addition of a new section to Rule 3, to be designated as Section (r), as follows:

Cars built new after January 1, 1926, or new cars contracted for after January 1, 1925, will not be accepted from owner unless equipped with steel underframe meeting A. R. A. strength requirements.

Cars having less than the A. R. A. underframe strength, do not fully meet present day service requirements.

### RULE 17

Both the Car Foreman's Association of Chicago and the Chief Interchange Car Inspector's and Car Foremen's Association of America recommend that cast steel coupler yokes with key attachments be made an A. R. A. standard and so inserted in Section (c) of this rule, because an A. R. A. 1¼ in. by 5 in. riveted wrought iron pocket cannot be used in connection with this coupler without changing from a cross key attachment to riveted yoke attachment, and, further, cannot be used in connection with the 6 in. by 8 in. shank D coupler on account of that coupler butt having no rivet holes. Cast steel coupler yokes with key attachments are being universally used and should be privileged to be used in place of wrought iron without constituting improper repairs.

The Arbitration Committee will refer this matter to the Committee on Coupler and Draft Gears for consideration.

The committee recommends the following modification of Interpretation No. 7 under this rule, to clarify the rule:

Q.—Interpretation No. 7 is the cause of complications, owing to difficulty in determining whether the patented brake connectors referred to are a standard of the car owner. A modified interpretation, to correspond with the regular practice of charging patented pressed steel journal boxes, would simplify the numerous billing transactions.

A.—The conditions are such as to justify a broad ruling on the basis of sections (b) and (f). Therefore, effective July 1, 1924, the material referred to, when conforming to A. R. A. standard, and subject to Rule 105, may be charged at stores department cost when applied in repairs to foreign cars on and after that date.

The committee recommends an additional interpretation to clarify this rule, as follows:

(18) Q.—Is equipment stenciling required on cars for certain details, such as Type D Couplers and K1 or K2 triple valves, where the stenciled date built definitely establishes the standard of car?

A.—No.

### RULE 20

The committee recommends that the second paragraph of this rule be changed as follows:

*Proposed Form:* When construction of car and trucks precludes the common methods of adjusting coupler heights, the application of metal shims between journal boxes and arch bars or truck sides will be permissible.

To provide for adjusting height of cars equipped with truck side frames.

### RULE 23

The committee recommends an additional interpretation of this rule, to clarify it as follows:

(3) Q.—Is the welding of cast steel truck sides, on and after January 1, 1920, prohibited, if not performed in accordance with the provisions of Rule 23, whether or not bill is rendered?

A.—Yes.

### RULE 30

To clarify the rule the committee recommends that Section (c) be changed as follows:

*Proposed Form:* (c) Wooden and steel underframe cars (except refrigerator cars) should be reweighed and remarked once each twelve months during the first twenty-four months the car is in service and thereafter once every twenty-four months. All-steel cars and all refrigerator cars should be reweighed and remarked at least once every thirty-six months. Such reweighing and remarking may be done after expiration of eighteen months (for wooden and steel underframe cars) and thirty months (for all-steel and all refrigerator cars) from the month in which previous weight was obtained. This paragraph does not apply to tank cars.

The committee recommends that Section (f), Item 10, first paragraph, of this rule be modified as follows:

*Proposed Form:* (10) The weights of the car so obtained must be furnished immediately on the prescribed blank to the car marker, who will mark the cars as provided in paragraph (a). When desired, any portion of the marks which will not be changed may be marked on the car before reweighing.

Reasons: To compel railroad performing work to furnish immediate advice and not compel owner to await receipt of the billing repair card.

The committee recommends that Section (g) of this rule be modified as follows:

*Proposed Form:* (g) When a car is remarked the car owner must be notified of the old and the new weights, with place and date. The proper officer to whom these reports should be made will be designated in "The Official Railway Equipment Register."

To compel railroad performing work to furnish immediate advice and not compel owner to await receipt of the billing repair card.

### RULE 32

The committee recommends that answer to Interpretation No. 4 be modified as follows, to clarify the rule:

*Proposed Form:* (4) Q.—Does a car damaged by wreck, derailment, cornering, sideswiping or other unfair usage, as defined under this rule,

carry the same responsibility to any other car in the same train or draft, or to cars to which the draft is being coupled, if said other car develops, at the same time, only minor defects?

A.—Yes, except as provided in Rule 33.

The committee recommends an additional interpretation to this rule, as follows, to clarify the rule:

(11) Q.—Please define Item 5, Section (d), Rule 32.

A.—This provision is intended to apply to damage to the first car when caused by engine coupling on and includes additional damage to adjacent cars in same draft.

### RULE 33

The committee recommends that answer to Interpretation No. 2 be modified as follows: (This modification does not change the intent of the present interpretation)

*Proposed Form:* (2) Q.—Are repairs to safety appliances chargeable to car owner on car derailed, cornered, sideswiped or subjected to any other Rule 32 condition where there is no other delivering line damage on the car, it being understood that damage to running boards on tank cars due to side-swiping and cornering is never chargeable to owner?

A.—In such cases owners are responsible for the expense of repairs to running boards, except on tank cars when sideswiped or cornered; hand-holds, ladders, ladder treads, sill steps, brake shafts, brake step boards, uncoupling levers and parts of these items where not involved with other delivering line damage.

### RULE 43

The committee recommends that the note to this rule be modified as follows:

*Proposed Form:* Note:—The handling line must furnish statement showing the circumstances under which the following damage occurred, if it is claimed the damage was result of ordinary handling. This statement, in the case of cars reported under Rule 120, to accompany request for disposition of car, and in cases where it is not necessary to report car under Rule 120, to accompany the bill for repairs:

- (1) Six or more longitudinal sills on wooden underframe cars.
- (2) Five or more longitudinal sills on composite wooden and steel underframe cars.
- (3) Four or more steel longitudinal sills on steel or steel underframe cars.
- (4) All longitudinal sills on all-steel underframe cars having but one steel center member.
- (5) Two steel center members on tank cars having two steel longitudinal sills only.
- (6) Steel tanks of tank cars shifted where secured by bolster or center anchorage.

The statement referred to should be furnished for steel underframe cars having one steel center member and for steel tanks of tank cars shifted where secured by bolster or center anchorage.

To clarify the rule the committee recommends an additional interpretation to this rule, as follows:

(2) Q.—Is damage to tanks of tank cars, caused by internal pressure of liquid, owner's responsibility?

A.—Yes, provided car was not damaged under any of the provisions of Rule 32.

### RULE 60

The committee recommends the following interpretations to this rule:

(4) Q.—In case air brakes are cleaned within nine months from date of last previous cleaning, may owner be billed for the work?

A.—Yes, when either triple valve or brake cylinder is found defective, unless air brakes are cleaned more than once on same road within sixty days from date of initial cleaning, in which case charge for subsequent cleaning is not permissible, regardless of whether previous cleaning was charged.

(5) Q.—In view of air brake stenciling on reservoir of tank cars being obliterated by slopping over of oil or other contents, is there any objection to relocating this stenciling on reservoir side of center sill at center of car on such tank cars as have only two longitudinal sills?

A.—On tank cars of this type there is no objection to this practice.

(6) Q.—Is it permissible to render bill for cleaning air brakes where air test is not given to the individual car, in accordance with Standard Instructions for annual repairs to air brakes on freight cars, after repairs?

A.—No, each car must be tested separately.

### RULE 68

The committee recommends the following interpretation to clarify this rule:

Q.—Is the delivering line responsible for a wheel slid flat and having worn flange, each defect exceeding condemning limit?

A.—Yes.

### RULE 70

The committee recommends that the first two paragraphs of this rule be modified as follows:

*Proposed Form:* Delivering Company responsible.

Cars stenciled "wrought-steel wheels," if found with cast-iron, cast-steel, or steel-tired wheels.

Cars stenciled "cast-steel wheels," if found with cast-iron or steel-tired wheels.

The status of the steel-tired wheel is not such as to require the protection of this rule.

### RULE 86

The committee recommends that following new paragraph be added to this rule:

"The use of A. R. A. standard axles, with wheel seats not more than  $\frac{3}{4}$  in. in excess of standard diameter, is permissible for remounting second-hand wheels."

To sanction the common practice, in order to avoid scrapping good wheels.

### RULE 88

The committee recommends the following additional interpretations of this rule:

(3) Q.—Where wrong repairs are made and defect card is issued for labor only, if the wrong repairs are standardized by intermediate road account of fair usage defect, what is the proper course so that intermediate line may be reimbursed?

A.—Bill, accompanied by defect card, should be made against the car owner for labor and material, car owner to render countebill for the labor on authority of defect card.

(4) Q.—Where wrong draft gear is applied in replacement of missing friction draft gear, under Rule 95, should defect card cover labor and material?

A.—Yes, in view of the handling line being responsible for the material of the missing gear as per Rule 95.

### RULE 91

The committee recommends that the limits for billing and exceptions in this rule be changed from twenty-five cents to one dollar, REASON: to comply with the practice in handling other bills by the Association of Car Accounting Officers.

### RULE 93

The committee recommends that the second paragraph of this rule be modified as follows, as the remainder is out of date:

*Proposed Form:* All charges for repairs made to cars on account of owner's defects, defect cards and rebuttal authorities shall be consolidated against any one company into one bill.

### RULE 98

The committee recommends that the third paragraph of Section (f) of this rule be modified as follows:

*Proposed Form:* When the repairs are covered by defect card of another company, the charge shall be made against the owner of the car, the defect card and billing repair card to be attached to the bill. The owner shall render counter-bill on authority of the defect card against the company issuing same, excluding any increase in amount of service metal due to application of other wheels; the owner's counter-bill to cover additional charge for entire loss of service metal occasioned in restoring full flange contour, in connection with delivering line defects on the wheels removed.

The committee recommends that a new paragraph be added, next to last paragraph of Section (f), as follows:

The responsibility for delivering line defects on wheels removed, when requiring the turning of such wheels, includes the entire loss of service metal to restore full flange contour, as well as the labor cost of turning.

The committee recommends that Section (i) of this rule be eliminated.

The delivering line defect is usually the immediate cause for turning wheels; therefore, the delivering line should reasonably bear the entire loss of service metal occasioned in restoring standard flange contour in such cases. This revision will also overcome complications in billing transactions.

The committee recommends that interpretation No. 4 of this rule be modified as follows:

*Proposed Form:* (4) Q.—What method should be used in charging for cast iron wheels applied in place of wrought steel wheels?

A.—In Case of Owner's Defects: Charge should be made against owner for the cast iron wheels applied at second-hand value (regardless of application of new wheels), journal bearings, box bolts and dust guards when renewed, as well as the labor R. and R., credit to be allowed for value of wrought steel wheels removed on basis of full flange contour, less labor cost of turning same when necessary. Defect card to be applied for the wrong wheels.

In correcting these repairs on authority of defect card the owner should bill for the labor and net value of journal bearings, box bolts and dust guards if renewed.

In Case of Delivering Line Defects: Above ruling applies except that no charge should be made against owner for journal bearings, box bolts, dust guards, and labor R. and R., nor labor for turning the wheels removed when occasioned by delivering line defects on same; credit to be allowed car owner for entire loss of service metal due to same cause.

The present interpretation penalizes the car owner for the wrong repairs made by other than car owner.



## RULE 99

The committee recommends that this rule be modified as follows:

*Proposed Form:* In no case shall car owner be charged for the second or subsequent application of journal bearings on same road if applied within 30 days from initial application at same journal location, (same trip, omitted) except when renewed within such period account change of wheels or axle at same journal location, in case the application of wheels is chargeable to owner.

To simplify billing transactions by avoiding controversies as to what constitutes a trip under various conditions.

## RULE 101

The committee recommends that the words "or missing" be eliminated from the answer of interpretation No. 3 of this rule, to correspond with Rule 58.

## RULE 106

The committee recommends that this rule be modified as follows:

*Proposed Form:* No percentage shall be added to bills rendered under these rules.

(The five following paragraphs in the present form are eliminated.)  
For repairs made on or after January 1, 1925, on authority of defect card, prices for labor and material in effect at date repairs are completed shall govern, regardless of date of defect card.

This provision is more equitable than the past practice and will also simplify billing. The eliminated portions are out of date.

## RULE 112

To clarify the rule the committee recommends that Note 5 to this rule be modified as follows:

*Proposed Form:* Depreciation shall be figured by subtracting year and month car was built from year and month car was destroyed, which will give the total life in years and months. No frictional part of a month to be considered.

## RULE 122

The committee recommends the elimination of interpretation No. 4 of this rule, on account of it being out of date.

## Passenger Car Rules of Interchange

## RULE 12

The committee recommends that this rule be revised to conform to recommended revision of freight car Rule 99.

## RULE 16

The committee recommends the following interpretations of this rule:

(1) Q.—If steam heat hose, conforming to A. R. A. specifications, and in good condition, is replaced with special high pressure hose, as required

and used for conveying steam from locomotive to dynamo, on car used in train forward of dynamo car, may owner be billed for such replacement?

A.—No.

(2) Q.—If A. R. A. specifications hose is used for conveying steam from locomotive to dynamo, and fails in such service, is handling line responsible?

A.—Yes.

## RULE 20

To clarify the rule, the committee recommends that this rule be revised to conform to recommended revision of freight car Rule 106.

This report is signed by F. W. Brazier, assistant to general superintendent rolling stock, New York Central; J. Coleman, general superintendent for requirement, Central Region, Canadian National; T. W. Demarest, general superintendent motive power, Pennsylvania System; W. H. Fetner, chief mechanical officer, Missouri Pacific; J. J. Hennessey, assistant master car builder Chicago, Milwaukee & St. Paul; G. F. Laughlin, general superintendent, Armour Car Lines; J. E. O'Brien, chief motive power and equipment, Seaboard Air Line; H. L. Shipman, general foreman, Atchison, Topeka & Santa Fe.

## Discussion

F. W. Brazier (N. Y. C.): The work of the Arbitration Committee takes about one-twelfth of a year's time. They have gone through all these items very carefully. I want to offer this resolution:

RESOLVED that the report of the Arbitration Committee be adopted as a whole as amended and that the interpretations contained therein and the recommended change in Interchange Rule 3, Section E, and change in Rule 98 be incorporated in Supplement to Interchange Rules issued July 1, 1924.

F. H. Hardin (N. Y. C.): The Arbitration Committee has attempted to clarify Rule 23 largely on the basis of the question that was raised by us, and that is in respect to the welding of cast steel side frames. The present rule is inadequate and the spirit of the rule is being violated without any question. Under the rule as it exists you are forced to accept any car with cast steel side frames welded not in accordance with the present rule if it is not stenciled, because then you are forced to assume that the welding was done prior to January 1, 1920. We have had considerable trouble with the failure of some of these side frames and it seems absolutely necessary that this rule be revised in some manner that will make it more fair.

Mr. Brazier: I want to say for Mr. Hardin's information that the Arbitration Committee thought the time to take action would be on the report of the Committee on Welding.

*The motion was duly seconded and carried.*

## Report of Committee on Tank Cars

## Dome Covers

The Sub-Committee on bottom discharge outlets has submitted a report as noted in the appendix.

The report indicates the performance of the A. R. A. standard type of valve as compared to other valves on trial, as to tightness and security against unseating under shocks due to ordinary handling, derailments, collisions, etc., brings out the fact that there are several types of valves on trial which are showing up so well in service that the committee suggests a change in the present A. R. A. tank car specifications to permit more extensive use of any bottom discharge outlet valve approved by the Tank Car Committee.

The importance of this subject is further emphasized by a memorandum prepared by Col. B. W. Dunn which also appears in the appendix; this memorandum having been prepared for the benefit of the Sub-Committee on Bottom Discharge Outlets and emphasizes the importance of minimizing property loss, also death and injury, as a result of bottom outlet failures during the years 1918 to 1923 inclusive.

The committee will continue with its investigations and tests, keeping in mind the suggestions made in Col. B. W. Dunn's memorandum, and recommending the submission to them of bottom outlet valves which may be considered as an improvement over the present A. R. A. design.

In connection with this subject a joint sub-committee was appointed in June, 1923, three members of the Tank Car Committee serving with three members of the American Petroleum Institute, with a view of adopting a standard dome cover other than the screw type.

The sub-committee examined a number of various types of dome covers now in use, and also submitted to a test a number of covers furnished by various companies. The result of these tests is covered in their report which is attached as an appendix.

You will note that two of these covers, Nos. 7 and 14, have been selected for further service test, and that a service test will also be made by the Union Tank Car Company of the cover recommended by the sub-committee, as shown in Figure 2, which is a bolted type dome cover hinged to a retaining ring and equipped with an approved safety device.

The tests made by the sub-committee were conducted at the plant of the Union Tank Car Company, Whiting, Indiana, and the committee desires to thank them for the use of their plant and facilities, also thank the various companies for furnishing covers for tests.

### Safety Valves

This subject is under investigation by the joint sub-committee appointed in connection with the design of dome covers. (See appendix for the report of this committee.)

The present standard A. R. A. safety valve, while performing successfully in relieving pressures in emergency, does not, however, make an absolutely tight closure at pressures lower than that for which the valve is set to open.

Your committee invites the co-operation of valve manufacturers in developing a new design of valve, which will overcome the leakage at low pressures. The use of a frangible disc in connection with the valve has been suggested.

### Specifications for Class VI Tank Car

There have been submitted to your committee requests for approval of designs of tank cars for carrying commodities in bulk

The committee recommends specifications of a Class VI tank car to contain helium gas, and changes in specifications for the Class V tank car. The outstanding feature of the present report, however, is the progress noted in the design and service testing of bottom outlet valves, dome covers and safety valves for tank cars used in the transportation of helium, propane, anhydrous ammonia, chlorine, sulphur dioxide, etc. While not yet complete, creditable progress has been made in this work. The report



C. E. Chambers  
Chairman

contains an interesting letter from Col. B. W. Dunn, chief inspector of the Bureau of Explosives, regarding bottom outlet valve failures. It is his opinion that several of the experimental valves now under test are greatly preferable to the ordinary type of valve, and while the experiments so far conducted perhaps do not justify their adoption as standard, one or more should be approved for general use by anyone desiring to install them.

for which the present American Railway Association specifications do not provide, such as helium gas, propane, anhydrous ammonia, and liquefied petroleum gas.

Transportation of helium gas is to be in large tanks, under a pressure of 2,000 lb. per sq. in. and your committee has reviewed designs of tank cars suitable for this commodity, and has also prepared a specification for what will be known as a class VI tank car for the transportation of helium gas, and desires to submit same for adoption as recommended practice.

These specifications cover a car having three or four helium gas tanks. Designs for this class of car, including details, the approval of which is specifically required, shall be submitted to and approved by the American Railway Association.

### TANK

Note.—It is so vitally important, because of the character of the commodities to be shipped in these cars, that the tank shall be absolutely tight, that riveted tanks, or tanks with seams welded will not be permitted.

1. *Bursting Pressure.*—Not specified.
2. *Material.*—(a) Forged steel.
- (b) Tanks shall be hollow forged in one piece to a straight cylinder after which they are machined inside and outside before the operation of closing in or necking down the ends is performed. After this latter operation, they are to be finally machined to size on the ends and outside diameter.
- (c) Tanks shall be made, marked, tested and reported in full compliance with the provisions of Interstate Commerce Commission shipping container, specification No. 3-A, as modified to cover cylinders having an outside diameter of not less than 40 in. and length of not less than 20 ft. overall.
3. *Welding.*—Not permitted.
4. *Calking.*—Not permitted.
5. *Tank head cover.*—A forged steel cover shall be provided, secured by bolts or studs. The joint of the cover shall be of approved form, tight against vapor pressure and when necessary to secure this a satisfactory gasket shall be used.
6. *Dome.*—None required.
7. *Inlet and outlet valves.*—(a) One cover of each tank shall be drilled through at the center and tapped at the outer end to take the charging and discharging valve.
- (b) The design of the valve shall be approved by the Bureau of Explosives and conform to requirements prescribed by the Interstate Commerce Commission regulations.
- (c) The charging and discharging valve on each tank shall be protected from accidental injury by a suitable steel cover securely fastened to the tank and arranged so that it can be readily opened for inspection and adjustment, and can be securely locked in a closed position.

### UNDERFRAME, ANCHORAGE, ETC.

8. *Tank cars* shall be built with underframe.
9. *Underframe material.*—(a) Underframe shall be of steel which complies with the American Railway Association specifications for structural steel, shapes, plates and bars.
- (b) Rivets shall comply with the American Railway Association speci-

cations for rivet steel and rivets for passenger and freight equipment cars.

(c) Underframes shall be equipped with cast or forged steel center plates. Malleable iron may be used for other details, such as striking plates, draft lugs, side bearings, push-pole pockets, etc. Steel and malleable iron castings shall comply with the American Railway Association specifications for these materials.

9-A. *Center sills.*—The center sill construction shall meet the following requirements: Minimum center sill area between rear followers—30 sq. in. Ratio, stress to end load, not more than 0.05. Length of center of draft sill members between braces shall not be more than twenty times the depth of the member, measured in the direction in which buckling may take place. Continuous sills having cover plates are preferable. If other construction is used, the effective cross-sectional area, including connections, must be at least as strong as continuous sills.

9-B. *Draft attachments.*—The strength value of the draft attachments and the center sill construction shall be equivalent to at least 12½ sq. in. of steel in tension and compression, 8 sq. in. of rivet bearing area, and 15 sq. in. in shear. The ratio of unit stress to end load shall not exceed 0.12.

10. *Cars without underframes.*—Shall not be permitted.

11. *Body bolster.*—Body bolster shall be of steel castings or of the built-up type thoroughly substantial and sufficient in strength to carry the superimposed loads. Jacking pads to be provided.

12. *Draft gear.*—Cars shall be equipped with a draft gear having a minimum capacity of 150,000 lb.

13. *Anchorage.*—(a) The lower tanks shall rest on steel supports, secured by rivets to the underframe, preferably located over bolsters, or the support can consist of a combination structure serving as a tank support and body bolster. The upper tank or tanks to rest on steel saddles mounted on lower tanks.

(b) The tanks shall be secured against end shifting and turning by a suitable anchorage at the center, or at the bolsters, or be secured by some other means other than head blocks. When bolts are used for securing the anchorage to the supports or underframing, they shall be turned bolts and driven in reamed holes. The method of anchorage of tanks shall be approved by the American Railway Association.

14. *Push-pole pockets.*—There shall be a push-pole pocket at each corner of the car. Where, from the construction of the car, the push-pole pockets can not well be placed on the corners of the underframe, they shall be applied to the body bolsters.

15. *Couplers.*—A. R. A. standards and recommended practice as is the case of other classes of freight equipment cars.

16. *Brakes.*—(a) Automatic brake, two cylinder type, suitable for car in passenger or freight service. Brake cylinders provided with slack adjuster and reservoirs of a capacity required by the service, with suitable cut-out cocks arranged in series so as to cut out one brake cylinder and part of reservoir capacity when car is used in freight service. A. R. A. standards and recommended practice to be followed. Braking power to be 40 per cent of light weight of car based on 50 lb. cylinder pressure for freight service, and 90 per cent of light weight of car based on 60 lb. cylinder pressure for passenger service. Brake piping to be 1¼-in. extra heavy, preferably wrought iron; angle cock nipples to be standard weight. Hand brake power shall comply with A. R. A. Circular No. S-III-11, May 15, 1919, from the General Committee, and revisions thereto.

(b) In order to provide for the movement of this car in passenger service, car shall be equipped with air signal and steam heat lines including end valves; standard weight piping to be used. Steam heat line to be insulated.

17. *Trucks.*—The truck as a whole shall be equal in strength to the carrying capacity of the axles and equipped with roller side bearings, steel wheels, axles, bolsters, journal boxes, bearings, center plates, etc., shall be in accordance with A. R. A. standards and recommended practice as in the case of other classes of freight equipment cars. Cast steel side frames, A. R. A. design, modified for clasp brakes.

18. *Marking.*—A. R. A. standard marking for freight cars (Fig. 6), with the additional marking "Helium Gas" and such other marking as may be required.

19. *Safety appliances.*—Safety appliances shall be in accordance with Fig. 7 and specifications therewith, which conform to the United States safety appliances standard. Fastenings for safety appliances must not be screwed or riveted to the shell or tank; they shall be secured to suitable tank bands or parts of car structure.

### SAFETY VALVES AND SAFETY VENTS

20. *Safety valves.*—None required.
21. *Safety vent.*—(a) One cover plate of each tank shall be drilled for two or more safety ports, tapped to take the safety devices.
- (b) The safety device shall preferably be closed with a frangible disc of suitable material of a thickness that will insure rupture at or below the



test pressure for the tanks. The design shall be approved by the Bureau of Explosives and conform to requirements prescribed by the Interstate Commerce Commission regulations.

(c) Safety devices on each tank shall be protected from accidental injury by a suitable steel cover, securely fastened to the tank and arranged so that it can be readily opened for inspection and can be securely locked in a closed position.

### TESTS

22. *Certification of tests.*—Tests of tanks and their safety devices shall be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives, in the form prescribed by the Interstate Commerce Commission.

23. *Tests of tanks.*—Tanks shall be tested before being put into service, after that as required by the Interstate Commerce Commission regulations for retest of cylinders.

Tanks shall be tested to a pressure of not less than one and two-thirds times the charging pressure corresponding to a temperature of 70 deg. F. for which the tank is designed.

24. *Tests of safety devices.*—Safety devices shall be tested at intervals as prescribed by the Bureau of Explosives.

When valves are tested, the date, pressure to which tested, place where test was made, and by whom, shall be stenciled on the tank in accordance with the American Railway Association standard marking for freight cars (Fig. 6).

### INSPECTION

25. *Inspection.*—Tank cars shall be inspected as to their construction and equipment before being placed in service, by inspectors in the employ of the car builder or the car owner.

The car builder shall furnish to the car owner, and to the chief inspector,

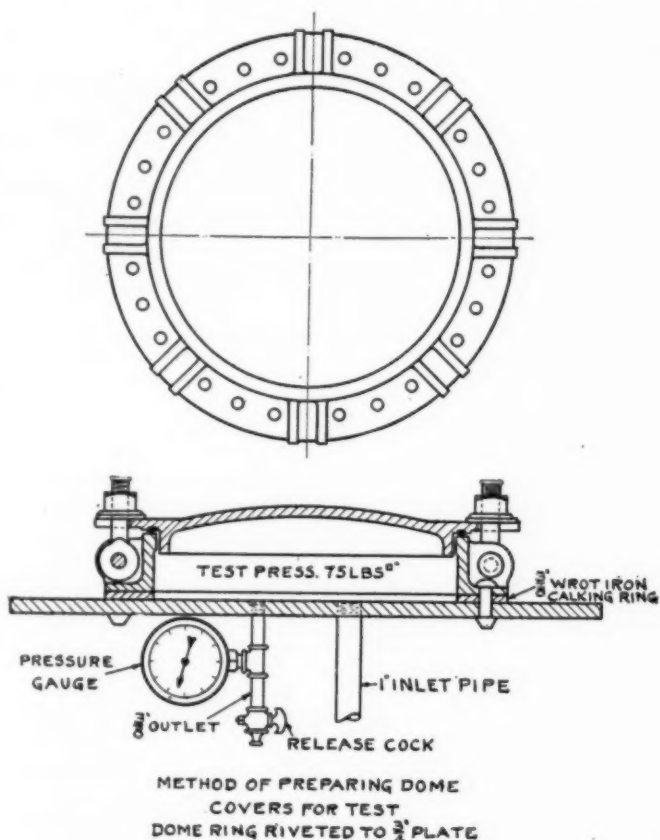


Fig. 1

Bureau of Explosives, before the car is placed in service, a certificate in the form given on Page 47, that such car complies in all details with the requirements of the American Railway Association Standard Specifications for Class VI Tank Car.

When the car and its equipment meet the requirements of the specifications, the legend "A. R. A. Spec. VI" with the initials of the party whose inspection made the inspection, and the date of the inspection, shall be stenciled on the tank in accordance with the American Railway Association standard marking for freight cars (Fig. 6).

### Changes Required in Class V Tank Car Specifications

For the transportation of propane and anhydrous ammonia, a Class V type tank car is required. It is necessary to increase the diameter of the tank beyond the maximum now prescribed by the specifications. The following revisions are, therefore, recommended in connection with these specifications in order to adapt them for the transportation of the commodities mentioned.

#### SECTION 1

*Suggested Change: Fiber Stress.*—The calculated fiber stress, based on the formula

$$\text{Stress in lb. per sq. in.} = \frac{\text{pressure} \times \text{diameter.}}{2 \times \text{wall thickness of plate.}}$$

shall not exceed 17,500 lb. per sq. in. at a pressure of 500 lb. per sq. in. for tanks over 52.5 in. inside diameter.

#### SECTION 2

*Suggested Change and Addition: Material.*—(a) All plates for tank, and for dome, shall be of steel complying with the American Society for Testing Materials specifications for steel plates of flange quality for forge welding, Grade "B."

(b) Minimum thickness of plates shall be as follows:

	Shell	Tank
Diameter of Tank	Sheet	Heads
52.5 in. or under.....	3/4 in.	3/4 in.
		(1/2 in. min. at weld.)

(c) Rivets for securing the anchorage to the tank shall comply with the American Railway Association Specifications for Rivet Steel and Rivets for steam boilers and other pressure vessels.

#### SECTION 3

*Suggested Change: Welding.*—All seams, including longitudinal, circumferential and dome seams, shall be welded by the water-gas process, hammered or rolled; the seams to be annealed after welding.

#### SECTION 5

*Suggested Change: Tank heads.*—Tank heads shall be dished to a radius equal to the diameter of the tank, for pressure on the concave side.

#### SECTION 13

*Suggested Changes: Anchorage.*—(a) Longitudinal. The tank shall be secured against end shifting by anchorage at the center, or at the bolster, or be secured to the underframe by some means other than by the use of head blocks. The method of anchorage shall be one approved by the American Railway Association.

Connection of anchorage to tank:

Shearing area of rivets.....30 sq. in.

Bearing area of rivets.....24 sq. in.

Rivets securing anchorage to shell shall be hot pressed and driven on the inside, the edges of the heads to be fused by electric welding to prevent leaking, and to be covered with a metal covering fused by electric welding on all edges to keep rivet heads free from all liquids to prevent corrosion.

The metal covering, when initially applied, to be provided with a hole to permit making the air pressure test, and after test has been made and no leakages occur at the fused edges of the rivet heads and the protective metal covering, the hole in the metal covering is to be tightly closed with plug electrically fused in place.

The longitudinal anchorage of tank to underframe shall be of metal throughout, and the minimum requirements shall be as follows:

Connection of anchorage to underframe:

Shearing area of rivets or bolts.....15 sq. in.

Bearing area of rivets or bolts.....12 sq. in.

When bolts are used for securing the anchorage rigidly to the underframe, they shall be turned bolts and be driven in reamed holes.

When, because of the construction, bolts cannot be inserted from the top so that the nuts will be on the bottom, nut locks shall be applied to both bolts and nuts, or rivets shall be used.

Where either tank or underframe has more than one connection, if these connections hold the tank rigidly to the underframe, the total rivet or bolt value shall be 20 per cent in excess of the requirement specified; if the connections do not hold the tank rigidly to the underframe, the total rivet or bolt value shall be double that specified.

(b) Dome yokes, tank bands, etc.—If tank bands are used, there shall be two for tanks not more than 78 in. in diameter and four for tanks of greater diameter.

#### SECTION 18

*Suggested Change: Marking.*—A. R. A. Standard Marking for Freight Cars (Fig. 6) with the additional marking, "Chlorine Gas (or Sulphur Dioxide, Anhydrous Ammonia, Propane, as the case may be) Tank Car—Tank and Valve Must Be Tested Every Two Years" on each side of tank below dome.

#### SECTION 23

*Suggested Changes: Tests of tanks.*—New tanks shall be tested with a hydrostatic pressure of 500 lb. per sq. in., also with air pressure of 100 lb. per sq. in., which air pressure shall be applied to the tank, also to the space between the heads of the anchor rivets and their protective caps, before being put into service and after that at intervals of not over 2 years, except that the air test is not required for subsequent retests, and the hydrostatic pressure reduced to 400 lb. per sq. in.

Tanks built prior to April 1, 1924, may be stenciled to show a 300 lb. test until they are due for retest, when the 400 lb. test must be applied and car so stenciled.

Any tank damaged to the extent of requiring patching or renewal of one or more sheets, shall be retested before being returned to service.

All tests shall be made by completely filling the tank with water, or other approved liquid safe to use, of a temperature which shall not exceed 70 deg. F. during the test, and applying the pressure in any suitable manner. The tank shall hold the prescribed pressure for not less than thirty minutes without any leak whatever. Calking to stop leaks developed during the test will not be permitted.

When tanks are tested, the date, pressure to which tested, place where test was made, and by whom, shall be stenciled on the tank in accordance with the American Railway Association standard marking for freight cars (Fig. 6).

#### SECTION (D)

**Suggested Change:** Class V tank cars, with tanks tested as prescribed by the specification shall be used for the transportation of liquid products whose properties are such as to involve danger of loss of life in the event of leakage or rupture of the tank; provided that shipments of such products in tank cars is authorized

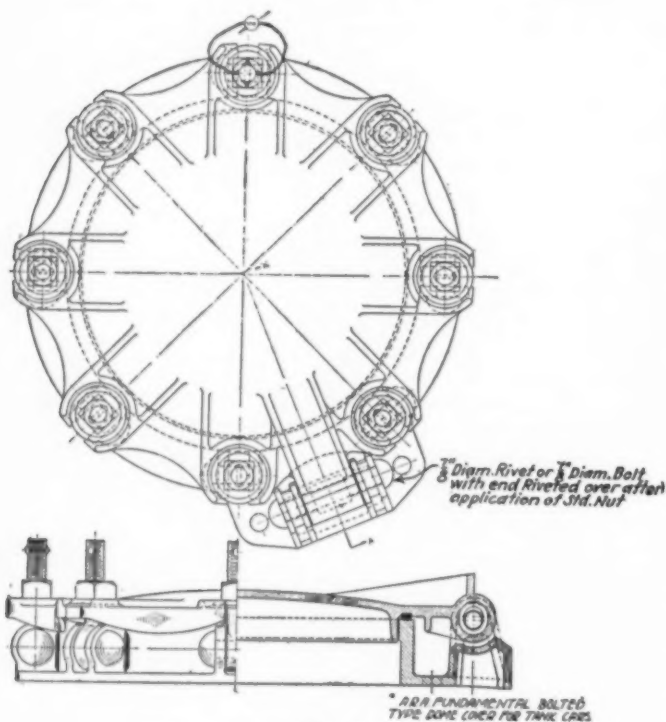


Fig. 2

by the Interstate Commerce Commission's regulations governing the transportation of dangerous articles other than explosives.

Liquid products of this description whose shipment has been so authorized are: chlorine, sulphur dioxide.

#### Changes in Other Class Specifications

Specifications for class III and class IV tank cars, section 2, material. Paragraph (b), should read:

"Rivets shall comply with the American Railway Association specifications for rivet steel and rivets for steam boilers and other pressure vessels."

Specification for classes I, II, III and IV tank cars, section 7, paragraph (a), should read:

"The valve shall preferably be designed to embody the features outlined on Page 55. Before a valve embodying these features may be properly approved for general use, the design of the valve and its mechanism, together with detailed information in regard to its performance under actual service conditions, must be submitted for approval."

Specifications for class III tank cars, section 21, safety vent, should read the same as section 21 for classes I and II tank cars. Present paragraph to have prefix (B) and add paragraph (a) as follows:

"(a) Tanks carrying volatile non-inflammable products whose vapor pressure at a temperature of 100 deg. F. does not exceed

25 lb. per sq. in. (see note) need not be equipped with safety valves, but if not so equipped, shall be provided with a 5-in. vent, depending on a frangible lead disk for safety, which vent shall be of approved design, as shown by Fig. 11, the disk to be of a thickness that will insure rupture at a pressure not higher than 30 lb. per sq. in. Note:—Typical liquid products of this description are: ammonia liquor, ammonia water."

Specifications for classes I, II, III and IV tank cars, modify as follows: Add to first sentence, section 6-B for classes I and II, and to section 6-C for classes III and IV, the following:

"and be permanently attached to tank by means of hinge or chain; when chain is used it should be  $\frac{3}{8}$  or  $\frac{7}{16}$  in. in diameter and attached on outside, on all new equipment and on existing equipment when receiving repairs."

Specifications for classes II and III tank cars, modify as follows: Add to first paragraph, Section 23:

"Tanks used exclusively in asphalt service, and so stenciled, the test period may be extended to ten years unless the tank is used for other commodities, at which time the car should be retested before being put in that service."

#### Heater Coils

Add to specification a drawing showing typical inlet and outlet connection for heater coil, as shown in Fig. 3, and refer to same in second paragraph, section 4, page 56.

#### Modification of Diagrams Shown in the Specifications for Tank Cars

Modify Fig. 4, center sill, to permit use of channel center sills for tank cars requiring bottom outlets. The new A. R. A. design to be recommended for classes V and VI tank cars.

Omit Fig. 5, covering minimum draft gear requirements. Same is obsolete.

Omit Fig. 6-A, showing stenciling on end of tanks. Same is obsolete and superseded by Fig. 6.

Modify Fig. 9-A, as follows: Spring case.—Remove from plan view, " $\frac{1}{2}$  inch drill, one only." Show on sectional view, " $\frac{9}{16}$  inch drill, one only."

Spring follower.—Indicate  $\frac{1}{4}$  in. radius on lower corner of follower which extends on a radius of  $2\frac{1}{4}$  in. from the center. This change suggested to prevent the follower from binding in the case.

Modify Fig. 10-A, as follows: Lower edge of port openings to have a  $\frac{1}{8}$  in. radius on the inside to prevent follower from binding.

Location of  $\frac{9}{16}$  in. drilled hole, shown as  $\frac{7}{16}$  in., should be increased to  $\frac{9}{16}$  in. and hole shown as  $\frac{9}{16}$  in., drill, one only.

#### Suggested Change in Rules of Interchange

Your committee suggests that certain tank cars formerly anchored with head blocks, the tank heads of which have not been reinforced, and all tank cars anchored with head blocks be barred from interchange after a certain date, and desire to recommend changes in the Rules of Interchange as follows:

"Tank cars formerly equipped with head blocks will not be accepted in interchange after January 1, 1926, unless tank heads have been reinforced in accordance with paragraph 5 of class II tank car specifications.

All tank cars having head block anchorage will be barred from interchange after January 1, 1930."

This report is signed by C. E. CHAMBERS (chairman), superintendent motive power and equipment, Central Railroad of New Jersey; C. T. RIPLEY, chief mechanical engineer, Atchison, Topeka and Santa Fe; GEO. McCORMICK, general superintendent motive power, Southern Pacific; W. C. LINDNER, chief car inspector, Pennsylvania System; COL. B. W. DUNN, chief inspector, Bureau of Explosives; A. E. SMITH, vice-president, Union Tank Car Company; GEO. HARTLEY, Hydro Asphalt Products Company; C. W. OWSLEY, superintendent railway traffic and sales department, The Texas Company.

#### Report of Sub-Committee on

##### Bottom Discharge Outlets

At the meeting of the Tank Car Committee held March 30, 1923, the sub-committee on Bottom Discharge Outlets was instructed to arrange for a test of 30 A. R. A. standard valves, in order to provide a basis for an intelligent comparison with the various experimental types of valves undergoing similar test. With this object in view, 15 U. T. L. X. cars and 15 T. C. X. cars were equipped with A. R. A. standard type outlet valves, and their performance observed for about four (4) months, with the following results:

The U. T. L. X. cars have made 55 trips under load, and on 13 of these trips valves leaked, permitting accumulations of liquid in the outlet pipes varying from two to five quarts. It does not



appear that in any of these cases the rate of leakage was more than the dropping allowed under the I. C. C. regulations, paragraph 401 (b).

Leakages were reported against 8 of the 15 cars, the other 7 cars against which no leakages were reported made a total of 21 loaded trips.

The T. C. X. cars have made 115 trips under load, and on 34 of these trips valves leaked at rates varying from 6 to 123 drops per minute. In many of these cases it is apparent that the rate of leakage could not be considered as more than the dropping permitted under the I. C. C. regulations, paragraph 401 (b).

Leakages were reported against 13 of the 15 cars, the other 2 cars against which no leakages were reported made a total of 13 loaded trips.

The following remarks are taken from these reports of leakages:

"Not very good tension in spring."

"Valve not closed entirely, due to laxity of tension in spring."

"No leak in this valve, which is exceptional."

"This valve leaked, but works as well as any on previous cars received."

"There must have been something on seat to cause leak."

"Can be closed very quickly if anything goes wrong."

The attached summary of performance of other types of valves now undergoing test shows the decided superiority of several of them, as indicated by an asterisk in the following table, over the A. R. A. valve from the standpoint of rigid closure and percentage of leakages:

Name of Valve	Leakages	Trips	Percentages of Leakages
A. R. A. Standard.....	47	170	27.7
*Positive Self-Locking .....	5	44	11.4
*Bolton and Minniear (See detailed summary) .....	0	18	...
*Carll .....	2	11	18.2
Carr .....	20	46	43.5
Dodge .....	11	18	61.
*Donomarent (Used in cotton seed oil service) .....	1	17	5.9
Everlasting (Four of these leakages occurred on last five trips).....	11	34	32.4
Garrett .....	1	2	50.
*Merco-Nordstrom .....	2	27	7.4
Osburn (No reports received) .....			
Perfection .....	1	1	100.
Roach No. 1.....	2	5	40.
*Roach No. 2.....	4	22	18.2
Union Tank Car Company (No reports received) .....			
*Waugh .....	1	5	20.

Includes all trips covered by Supplemental Summary, dated April 23, 1924, and Summary shown in 1923 Report.

C. W. Owsley and A. E. Smith call particular attention to the fact that they are not satisfied with the test reports received on the A. R. A. standard valves, as no instructions were given unloaders to see that outlet nozzle was properly drained after raising the valve prior to removal of the cap which is in accordance with Bureau of Explosives Rules, and, therefore, feel that the test reports are not representative of the condition of the standard A. R. A. valves.

This sub-committee report on bottom discharge outlets is signed by W. E. Cooper, chairman; C. W. Owsley, C. T. Ripley and A. E. Smith.

#### Letter from Col. B. W. Dunn on Bottom Outlet Failures

Referring to \*\*\* bottom outlet failures occurring in the transportation of gasoline during the years 1918 to 1923, inclusive, it will be noted that the bottom outlet failures may be divided into six (6) groups, according to the nature of the failure, the most serious being that in which the fact that the valve leaks slightly would have very little effect on the results. I refer to the breaking off of the outlet valve casting and unseating of the valve by external violence due to derailments, collisions, etc. Eighty-two (82) failures of this nature have caused a property loss of \$597,498, most of which would probably not have occurred had the outlet valve been locked on its seat.

If we compare failures of this nature with failures due to the valve or valve cap being loose and permitting slight leakage only, it will be observed that while failures of this nature are most numerous, 239 having been reported in the past six (6) years, the property loss is only \$27,861, and might possibly be avoided by more frequent inspection of the condition of the valve and by the use of a good gasket in the valve cap.

It is true, however, that the 79 cases in which the valve was unseated and the outlet valve casting or outlet valve cap broken by the formation of ice in the outlet chamber might properly be added to the 239 cases of leaking valves and caps, any one of which, under certain conditions, might have resulted in the more serious failure, indicated by the \$62,536 loss chargeable to the 79 cases of frozen outlets. The damage resulting from water freezing in the bottom outlet chamber might be prevented by providing an air trap in the outlet chamber to take care of the

expansion of freezing liquid. It is my understanding that a device of this nature has proven very satisfactory in several cars equipped by the Sinclair Refining Company, and that the Tank Car Committee has authorized the installation of this device on a number of cars for trial under actual service conditions.

The three (3) other classes of failure might occur in spite of the tightness of the valve, inasmuch as they are primarily due to carelessness. In considering the valve problem, however, it is well to have these failures in mind in order that we may provide, if possible, a means of making the valve fool-proof.

Several of the experimental types of valves now undergoing trial provide a means for locking the valve firmly on its seat, and, therefore, solve the problem as far as the most expensive type of failure is concerned. They also might reduce the losses chargeable to frozen outlets, inasmuch as while they might leak slightly and permit freezing of liquid in the outlet chamber, it is believed, that aside from the bursting of the outlet pipe or cap, very slight leakage of contents would follow, whereas with the standard A. R. A. type of valve, freezing of liquid in the outlet chamber usually lifts the valve off its seat at the same time that it bursts the pipe or cap and permits a heavy flow of liquid when the ice begins to thaw.

It would, therefore, appear that several of these experimental valves are great improvements over the ordinary type of valve now in use, and that while the experiments of the past few years may not justify the adoption of one or more of these types as a standard, it would seem reasonable for the A. R. A. Tank Car Committee to approve one or more of these valves for general use by anyone desiring to install them.

COLONEL B. W. DUNN,  
Chief Inspector, Bureau of Explosives.

#### Report of Joint Sub-Committee on Dome Covers

In connection with the meeting held by the Tank Car Committee at New York City, Friday, March 30, 1923, at which time, in accordance with Docket TC-11, sub-committee was appointed to establish fundamental principles in dome cover designs with a view of adopting recommended practices.

The committee made a survey of the various types of dome covers now in use on tank cars through a questionnaire that was sent out to the majority of tank car owners and operators in the United States, and as a result of the compilation of this question-

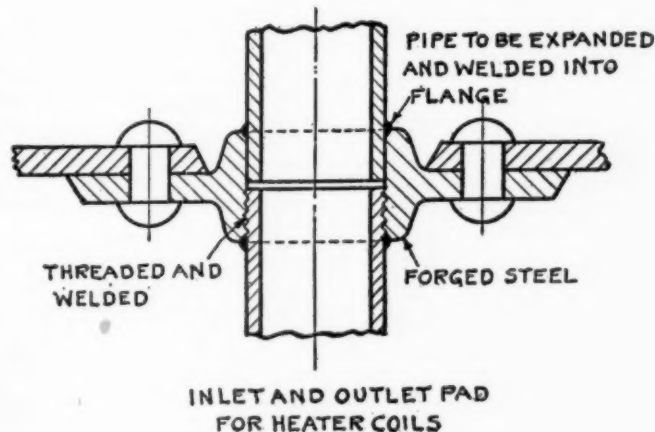


Fig. 3

naire, it was deemed advisable to have some of the tank car owners submit their dome cover for examination and test. The dome covers selected for test differed very materially in design, but were representative of the different styles of dome covers now in use. A total of fifteen (15) dome covers, as shown below, were submitted for examination and test on March 14 and 15, 1924, at the Union Tank Car Company's plant, Whiting, Ind.

Committee's Identification No.	Designer or User of Dome Cover Submitted	Shown on Print
1.	General Chemical Company.....	73-BR
2.	Pennsylvania Tank Car Company.....	905
3.	M. A. Garrett (Tank Car Appliance Co.).....	TC48C
4.	Union Tank Car Company.....	3462
5.	The Texas Co. (Chicago Steel Car Co.).....	2240
6.	General American Tank Car Corp'n.....	4929
7.	F. J. Redcliffe.....	Sketch—A. H. Kenneweg
8.	A. Y. McDonald Mfg. Co. (Universal Gas-tight Cover)	1711 and 1848

9. American Car & Foundry Company  
Plain screw type cover no print covering
10. American Car & Foundry Company.....3572540
11. American Car & Foundry Company.....3572627
12. American Car & Foundry Company.....3572542
13. Union Tank Car Company.....3456
14. American Car & Foundry Company.....41710894
15. Shanely and French.....Order 7058, Sheet 1  
Order 7058, Sheet 2  
Order 7058 dated 1-16-24

The following members of the Committee and their representatives examined and tested these dome covers:

- W. C. Lindner, chairman.
- R. H. Owens, representative of Cosden Company (Member).
- G. S. Goodwin, representative of Rock Island R. R. Co.
- W. E. Cooper, representative of Bureau of Explosives.
- B. L. Hustis, representative of Bureau of Explosives.
- C. W. Owsley, representative of The Texas Company (Member).
- J. J. Root, representing Member A. E. Smith, Union Tank Car Company.
- J. R. Alcott, representing Member C. T. Ripley, A. T. & S. F.

All the dome covers submitted were fitted up in accordance with the Union Tank Car Company's tracing sketch, dated September 10, 1923, shown as Fig. 1, and both air and water pressure were applied to develop tightness of the cover. All of the covers tested in the above manner showed a tight seal, there being no evidence of leakage, and on examination of the various features of the dome covers, the Committee concluded the following:

- Cover No. 1.—Not a general service dome cover, purely an acid car cover and embodies no safety devices.
- Cover No. 2.—Has no safety devices and is also equipped with a loose gasket in the cover which could easily become lost.
- Cover No. 3.—Gives a warning of internal pressure, similar to present screw type cover, but could be opened under internal pressure.
- Cover No. 4.—Could not be applied to all tank cars on account of the present design of some of the old type screw covers having a flat surface, and not strong enough for the yoke device.
- Cover No. 5.—Has no safety device. Cover could be removed under internal pressure.
- Cover No. 6.—Liability of knocking off the two 2-inch pipe vents, thereby losing the lading in the event the car is wrecked and turned over on its top.
- Cover No. 7.—An ordinary bolted type of cover with a safety device, which is very good, inasmuch as the cover could not be removed under internal pressure.
- Cover No. 8.—Is not a permanent dome cover and could not be considered by the Committee as anything else but a loading and unloading device.
- Cover No. 9.—Present standard screw type cover with asbestos metallic gasket.
- Cover No. 10.—A bolted type cover so constructed that it would require more than one man to apply same. Furthermore the lugs on the cover that engage hinge bolts were found to be weak in construction, and there would be the possibility of their being broken off under service conditions. This cover has a safety device which necessitates rotating cover after the hinge bolts were loosened, in order to take the cover off; however, it would be possible to rotate this cover under internal pressure.
- Cover No. 11.—Embodies the same principles of operation as No. 10, and the same objections, therefore, apply.
- Cover No. 12.—Embodies the same principles of operation as No. 10, and the same objections, therefore, apply.
- Cover No. 13.—Is a malleable iron bolted type cover that has no absolute safety device; there being the possibility of removing the cover under internal pressure.
- Cover No. 14.—The present standard screw type of cover, to which an interior lift valve is applied that prevents the removal of the cover under internal pressure.
- Cover No. 15.—Is not a permanent dome cover and could not be considered by the Committee as anything else but a Loading and Unloading Device.

In view of the fact that dome covers Nos. 7 and 14 were the only ones which showed merit as absolute safety devices, it was decided that the Union Tank Car Company and the Cosden Company should purchase and apply six (6) covers each of the No. 7 design, and the Texas Company six (6) of the No. 14 design, and apply them to six (6) of their tank cars, in order that these covers may be given service tests, and the committee, thereby, be in a better position to judge the merits of the safety devices.

In the Whiting tests it was found that the bolted type dome covers with internal pressure would give evidence of the pressure as soon as one of the bolts were loosened, and it was the opinion

of some of the representatives of the committee present that this was sufficient warning to an operator to desist from loosening any further bolts or attempting to take off the cover; other representatives of the committee, however, were of the opinion that an absolute safe-guard should be applied to covers, so that it would be impossible to take off the dome cover under internal pressure, and inasmuch as cover No. 7 was the only one which had such a device for the bolted type dome cover, the application of this device to twelve (12) tank cars, as above referred to, was deemed advisable.

As a result of the tests conducted, the committee studied the various designs of dome covers and are of the opinion that a bolted type dome cover hinged to the retaining ring will give the best service under all conditions, and they, therefore, recommend that a dome cover and dome cover ring of the design shown in Fig. 2, with an approved safety device, for Class III and IV tank cars, be given a further trial. In designing this cover the committee has established a standard inside diameter of sixteen (16) inches to better enable a man to enter, and also ribbed the top of the cover and at the hinge bolt slots, so that in unscrewing the nuts from the hinge bolts, it would not be possible to throw off the bolts until after the nuts have been unscrewed a certain distance. The recommended cover as shown in Fig. 2 has been referred to the Sub-Committee for further consideration.

The committee further feels that no action should be taken on the screw type dome covers for Classes II, III and IV tank cars until such time as they have obtained definite results from device No. 14, which is applicable to the screw type dome cover, which will be tried out on six (6) of the Texas Company's tank cars under service conditions.

This report is signed by the Members of a joint sub-committee on Dome Covers.

A. R. A. Tank Car Committee: W. C. Lindner, chairman; C. T. Ripley, Geo. McCormick.  
American Petroleum Institute: A. E. Smith, C. W. Owsley, R. H. Owens.

#### Report of Joint Sub-Committee on Safety Valves

In connection with Docket TC-7, in which the Sub-Committee were directed to prepare drawings for suitable gages for safety valves.

The committee is still working on this proposition, and have made some progress toward this end, but to date have not developed a suitable gage to recommend for adoption.

With regards to working up a new design of safety valve, in line with Col. B. W. Dunn's idea of using frangible disc, wish to report that no valves of this type have been submitted for test. However, under date of November 12, 1923, tests were conducted at the Altoona Laboratories, Pennsylvania System, of a safety valve designed by J. C. P. deKrafft, of the Tank Vent Valve Company, 1330 Pine Street, Philadelphia, Pa., as covered in our report of November 20, 1923, the conclusions of which were that this safety valve was no improvement over the present standard safety valve.

The deKrafft valve was the only new design of safety valve submitted to the committee to pass judgment on, and it will, therefore, be necessary to extend the work until such time as a suitable safety valve can be developed.

This report is signed by members of the joint sub-committee on Safety Valves.

A. R. A. Tank Committee: W. C. Lindner, chairman; C. T. Ripley, Geo. McCormick.  
American Petroleum Institute: A. E. Smith, C. W. Owsley, R. H. Owens.

#### Discussion

G. W. Rink (C. R. R. of N. J.): These tanks in order to carry 2,000 lb. pressure are made extremely heavy. They extend the full length of the car and generally carry in multiples of two, two below and two above, of two below and one above in the center extending the full length of the car.

In the last sentence in the first paragraph under section 23, the 400 lb. has been changed to 300 lb. per sq. in.

Omit the third paragraph of Section 23 reading: "Tanks built prior to April 1, 1924, may be stenciled to show a 300 lb. test until they are due for retest, when the 400 lb. test must be applied and car so stenciled."

The following should be added to the last sentence of the fifth paragraph ending: "receiving repairs." "This does not apply to tank cars used for transporting sulphuric acid or nitrating acid."

That is because the cover on the acid cars must be arranged so that they can be carried off away from the



dome to allow the drippings which adhere to the underside of the cover to run over the tank and not be adjacent to the dome where the ladder is located.

The committee also desires that the definition of a tank car be further clarified, and I will read the proposed change, and I assume it will be submitted to letter ballot:

*Proposed change—Tank Car:* A tank car is any car other than a box car, to which one or more metal or wooden tanks designed for the transportation of liquids or compressed gases are permanently attached and from which such tanks are not and cannot be detached for filling or for emptying or storage of their contents.

W. A. Mitchell (M. K. & T.): One thing of vital importance in connection with cars now in service is anchorage. It is our experience that the anchorage bolts shear off quite too frequently, permitting tanks to shift and, in some cases, causing the outlet leg to be broken off and contents of tank wasted. If matters now assigned to the Tank Car Committee do not take into account this subject, their duty should be extended and a study made and recommendations formulated to cover the anchorage of the various types of cars now in service with the least possible cost to car owners.

In connection with specifications for the Class VI Tank Car, it is noted that the specifications of trucks "shall be in accordance with A. R. A. standard and recommended practice, as in case of other classes of freight equipment cars." From this recommendation, it is considered that trucks suitable for freight cars other than tank car equipment are to be considered satisfactory in every way for use under tank car equipment. Why should not trucks suitable for other classes of freight equipment be suitable for use under tank cars? The M-K-T Lines handle a great many tank cars under load, and our experience during the past 16 months leads me to believe that it might be possible, by thorough study of trucks, body bolster construction and side bearings, to eliminate a great deal of trouble by reason of derailments of loaded tank car equipment.

During the year 1923 and the first four months of year 1924, there were 91 loaded tank cars derailed on M-K-T Lines, attributed to soft track and excessive side bearing clearance. There were 14 of these cars and contents destroyed by fire. Settlement for 14 cars was made with their owners for \$22,802.03, or an average cost of \$1,628.71 per car. Of the cars in accident, 67 were repaired in contract shops at a cost of \$39,512.72 or an average of \$540.49 per car, making the total \$62,314.75 in settlement with owners for cars destroyed and cost of cars repaired. This is an average of \$769.32 per car. I am satisfied that the loss of contents and damage to other equipment would run the cost to M-K-T Lines for the 16 months under consideration to well over \$100,000.

Many tank cars have side bearings made of pressed shapes and due to the high center of gravity there is a great deal of oscillation. This tends to distort side bearings of this construction, thereby increasing side bearing clearance until, in many cases, it is far greater than recommended practice or far greater than should obtain in car equipment of the ordinary type.

The construction of body bolsters should be such that there would be absolutely no deflection, and side bearings should be of a type whereby the clearance should be made the minimum amount and not subject to increase through distortion of the bearings or any part.

J. D. Freeman (S. P.): The committee reports having made tests and comparisons of the A. R. A. type of bottom-discharge outlets with various experimental types. We may differ as to the propriety of locating these outlets at the bottom of tank cars, but until it has been demonstrated that some other location is preferable, the committee will no doubt continue to give careful attention to this important item.

The changes in specifications in Class V tank cars, recommended by the committee, are made necessary, it would seem, to provide for the handling of other commodities than are now provided for movement in this class of car. In increasing the diameter of Class V tank cars, changes are necessary and the recommendations made by the committee are in line with good practice and safe and economical handling of such products in tank cars.

Tank cars for handling Helium gas is a new proposition and one that has not heretofore come before the association. It is hardly possible that a report, complete and correct in all details, is given you regarding the construction of tank cars for this purpose. Some modification and changes will no doubt be found necessary. However, it is my opinion that the committee's recommendations regarding the construction of tank cars for handling Helium gas should have the approval of the members.

The suggested change in the Rules of Interchange regarding tank cars with head block anchorage and tank cars that formerly had head block anchorage, the tank heads of which have not been reinforced, should be rejected in interchange at some stated time, is a step in the right direction, as practically all such cars are of an absolute type and, generally speaking, of weak construction.

Mr. Brazier: I was very much interested in the statement of Mr. Mitchell of the large number of tanks destroyed on the M. K. T. There is a fault somewhere, either in the track or in the construction of the tank car. This committee has gone into the details of the construction very carefully and thoroughly, but there is evidently something which could be overcome.

G. S. Goodwin (C. R. I & P.): Our experience on the Rock Island is much the same as that of the M. K. T. We are also having a great many cars destroyed.

I do not understand that there is any intention to bar present construction of these cars but, on the other hand, to study and recommend the best designs of bottom-outlet valves for new cars to be built. While the present valves may not be perfect, they must have been giving good service for years.

The aim is to get an improved type dome cover that can be applied to the old cars with only a slight change and without extensive renewal. At the present time the bolted type appears to be the most desirable and probably should be fitted with some sort of hinge so as to keep the cover with the car to which it belongs.

The seat for the nut of the clamping bolt should be ribbed so that the bolt may not be turned out of the way until the nut has been turned off a sufficient distance to release all internal pressure, and neither can it be turned down forcibly with a hammer until the nut is well loosened.

Comment is made as to the present safety valves leaking. It is hard enough to keep the expensive locomotive safety valves tight and here the difficulty is increased both because the valve must be reasonable in price and because the pressures are much less. Again the locomotive is always at home; the tank car seldom is. This precludes the use of any complicated valve.

The report suggests the use of a frangible disc in connection with the spring loaded valve. This may be a way out of the difficulty if a proper design can be developed so that neither or both may be used as desired.

The design of the helium gas tank is interesting and if made of the diameter specified, will involve thicknesses upwards of two inches.

G. E. Tiley (General Chemical Company): The suggested changes in the Rules of Interchange require that by January 1, 1926, all tank cars with heads less than 17 in. thick showing evidence of distress be reinforced at

the bottom with steel shoes not less than  $\frac{3}{8}$ -in. thick, and bar head block anchored cars after January 1, 1930. The specifications for classes 1, 2, and 3 tank cars authorize the use of equipment for shipment of corrosive and inflammable products as well as products not within either category. Exclusive of test and internal pressure requirements, no discrimination is evident to fully account for conditions peculiar to certain products. This holds true of sulphuric acid and mixed nitric and sulphuric, both of which are corrosive. The proposed changes in the Rules of Interchange are radical in nature and to a large extent impractical, if it is intended by the committee that methods ordinarily followed on cars carrying non-corrosives are to be applicable on acid equipment.

On January 22, 1924, we outlined our position to the secretary of the association and requested modification of the specifications to cover standard practice in applying tank patches and tank head shoes. We understand this matter is now under consideration.

Taking up the application of tank head shoes and patching, we find that there has been an utter lack of uniformity in that respect in the past, and have taken the initiative to work out standard specifications which will relieve railroads of certain hazards which they now have due to the independent procedures used by the various companies owning the cars or by the railroads over which the cars are moving. On a car carrying a corrosive, of which sulphuric acid and mixed nitric and sulphuric are probably the only ones transported in steel tanks, we have determined the average life of such a tank, if carefully used and kept free from as much internal moisture as possible, to be in the neighborhood of 17 years, but during the term of the life of that tank, the tank decreases in thickness due to internal corrosion. As long as the acid is maintained at high strength, very little depreciation is noticed, but after a number of years of service, with the introduction of air for unloading purposes, the condensate attacks the steel to a certain extent so that in time the thickness is such as to preclude some of the changes that are at present recommended. These cars, it might be stated, are not unloaded at the bottom in any case on account of the dangerous condition that might turn up. The acid is unloaded through the dome by the application of air, but is forced out through a pipe which extends to the bottom of the tank and is connected to the customer's receiving lines. The General Chemical Company and, as far as I know, every other owner of acid tank car equipment would never think of applying a shoe to a tank head without first burning out the defective section. The reason for that is that should a leak develop underneath the head of a single rivet and permit acid to get between the head proper and the applied shoe iron sulphate would shortly develop, and with that formation you would get a weak acid formation which would attack both the head and the shoe, and you would never know what your real thickness of either plate was. Should any such cars be washed out for change of acid and have a leak of that character, the water would naturally find its way in behind the acid, mingle with it, and set up a terrific action on both plates and aggravate the condition which the association is about to set up on that class of equipment.

When we perform work of that character, we burn out the section, carefully fit the shoe using the circumferential seam and using a horizontal tube leaving the seam across the top of the shoe, but under the present tank car specifications, if we were to follow that practice, we would use a  $\frac{3}{8}$  in. plate for that purpose, in other words, we would have a thinner plate than we had originally in the tank head, so that this becomes a very serious proposition

with us. We believe that in the case of acid equipment it would be a good idea to submit that particular phase involving the application of patches also to the manufacturing Chemists' Association which is composed of members of all acid shippers and through that body referred to their Tank Car Committee.

As regards the application of metal anchorage to existing acid cars we feel that in the first place metal anchorage, as now specified for new equipment going into the acid service, has not up to this time demonstrated that it is going to be free from fault. On account of the internal corrosive condition which I spoke about the heads of the rivets gradually deteriorate along with the bottom sheet. Your anchorage is located at the center of the bottom at a point where this deterioration is apt in some cases to become more rapid from the friction of the acid working toward the center of the car down into the well and out of the discharge pipe. That of course would depend largely on the grade of acid contained in the car and the quality of the steel and the rate at which it would be attacked by the acid.

The point we make is that the application of metal anchorage to an acid curve with a  $\frac{1}{2}$ -in. bottom sheet will naturally work out very well for a number of years. We built 50 sulphuric cars in 1920 and used the substantial anchorage on those cars, but we are not altogether satisfied that in the final analysis the anchorage will work out as well as it is hoped by this association, but, getting to the existing cars, our company is just as anxious to support the railroads in their efforts for safe transportation as any other shipper. Our instructions are to the effect that the cars must receive proper attention before being delivered, but in attempting to apply metal anchorage to existing cars where the original sheath was  $\frac{7}{8}$  in. thick and where less now obtains seems to us to be a very dangerous proposition. It has been suggested that if the bottom sheet were deteriorated a pad might be riveted on in place either by burning out the section or riveting it over the old sheet, but by throwing the force to the center of such a tank directly at the bottom would have a tendency to buckle that bottom sheet along the edge of your applied section.

Many of you do not know that sulphuric acid weighs 15 lb. to the gallon. That is why the diameter of those tanks is not as large as on an oil car. Sulphuric tanks are never shipped part loaded on account of the heavy liquid, but when they are shipped in fully loaded condition, we have a solid weight to contend with, and while it is true that head blocks are giving trouble on sulphuric cars, we believe that the majority of that trouble can be remedied if the owners be required to keep their head blocks in good condition, and if the railroads, while these cars are in transit, will go to the trouble to properly inspect them, and where they find the compressed head block will move that head block and see that it is in good condition close to the tank head, and apply the proper thickness of seam between the head block casting and the head block itself. The principal trouble with the heads on tank cars is caused by loose head blocks where the tank received a blow at one end, and is permitted to shift against the head block with its load and either crush the head block further or even open up the tank head.

The tank car specifications at the present time seem rather indefinite in the term "evidence of distress." Evidence of distress might be construed by every interchange inspector as meaning something different. For the acid manufacturer we believe we are able to detect that condition before it does any real damage. Once in a while an unforeseen condition will develop just as in every other railroad operation. It might be well to make this more



definite. If it is intended to mean dented tank heads, it is more than likely that 80 per cent of the tank car equipment would have to have the heads renewed or shoes applied.

O. D. Buzzell (A. T. & S. F.): We find that a great many oil companies in our territory will gather a few tanks, put them out and stencil them "tested 60 lb. per sq. in." and they can not pass a test. There is considerable camouflage on the part of the very small companies and railroads must watch these cases or they are going to get into very serious trouble with them.

I was glad to note the side bearing question was mentioned. Personally I favor the old type flat side bearing where you have some surface and can keep it up to a reasonable clearance with very little outlay.

C. F. Giles (L. & N.): Tank cars in large numbers are handled over the Louisville & Nashville, with all kinds of commodities, and the great source of our trouble is due to defects in the trucks. Most of these cars, especially the older types are mounted on arch bar trucks with a straight top and we find that the oil box bolts and column bolts are sheared off by these straight bars, which causes most of our trouble.

W. E. Cooper (Bureau of Explosives): There is one thought that occurred to me today when I listened to the gentleman from the M-K-T wherein he spoke of 91 derailments. In looking over our reports for 1922 I find we have a record of 13. That would indicate that the railroads are not complying with the Commission's requirements to report all accidents involving shipments of dangerous articles. It is very essential that those reports should be made to us. It is the only way we have of analyzing or arriving at some conclusion as to the cause of these accidents.

We have heard of the parts of the car that cause the most concern: The bottom outlet, the dome cover, and the safety valve, and we are continually striving to get some action towards the improvement of those features of the car. The different committees that have been working on that have been doing the best that they can. The chief difficulty seems to have been that very few ideas are submitted.

A. E. Smith (Union Tank Line): We have been giving our discharge valves extraordinary attention. Having experimented with many different types of discharge valves we have come to the conclusion that the A. R. A. type gives us as good service as any of the types submitted. We found that by sweeping out the tanks, we are able to make those valves absolutely tight.

The A. R. A. specifications are very complete, and when cars are constructed in accordance with the specifications we will have a car that will withstand ordinary transportation service but, as the requirements are laid down by the American Railway Association, should not the car owner get the necessary protection for his car under the interchange rule?

The American Petroleum Institute have for the past several years made recommendations so we would get the necessary protection, but so far we have been unable to get any sympathy and have not had an interchange in the rules. In most cases railroads that take our cars and damage them, then turn them back to us, under rule 32, say that all the damage occurred in ordinary switching. The statement of facts that we get under which these cars are damaged does not give us any relief.

G. E. Tiley (Gen. Chem. Co.): The tank car specifications state that the recommended practice of the association provides a minimum air brake power of 60 per cent. of the light weight of the car, based on 50 lb. cylinder pressure. The proposed specifications for Class VI car say that the braking power shall be 40 per cent. of the

light weight of car, based on 50 lb. cylinder pressure for freight service.

Mr. Rink: That is due to the fact that Helium gas is so light that the light weight and the loaded weight of the Helium car is practically the same and it is necessary to keep down the braking power based on the light weight to 40 per cent. in order to harmonize the braking of a car with other equipment.

Mr. Tiley: Would that harmonize the braking power—a car with brakes at 40 per cent. of its light weight and a train where other cars have brakes at 60 per cent. of its light weight based on the same cylinder pressure?

Mr. Rink: The braking power of a freight car is based on its light weight and when that car is loaded the braking power automatically reduces to about 25 or 30 per cent. Due to Helium gas being so light we practically have a loaded car at all times and the braking was based on those conditions.

L. P. Michael (C. & N. W.): The Northwestern had occasion to check up the heating coils a short time ago and found that there were many different designs. Some were satisfactory and some were not. The reasons for their being unsatisfactory were: First, pipe coils were so located that they would not drain properly, and; second, the pipes themselves were not secured in a manner which would provide for expansion when the steam was turned into them.

When the pipe coils were so loaded that the condensed water would not drain out of them the pipes would be bursted in cold weather and when the pipes were located so that they could not expand properly they were liable to break off at the connections and cause leakage. Leakage in both cases would mean that the contents of the car might escape if the outlet and inlet connections were not closed.

The Northwestern has a very satisfactory arrangement of piping which has the inlet pipe connection made in the usual location with the pipe extending to the end of the car. From this point the pipe extends upward into a header, two or three feet above the pipe, and then branching out across the end of the car. From this, header pipes extend backward the full length of the car, and then at the opposite end a header is located which is connected back to the outlet. With this arrangement the steam entering the car can go to the other end and drain properly to the outlet.

The coils should extend as near as possible to the end of the car, for the reason that in many coils it has been found that the coils are much shorter than the car itself. This means that in handling oil, which gets very nearly solid in cold weather, that the end of the car cannot be drained and a large amount of oil will be left which the inspector or car handler cannot drain out. If the coil extends as close as possible to the end of the car all of the contents can be removed.

Mr. Rink: I would like to call the speaker's attention to our specifications on heater pipe on page 56 of our standard specification which I believe covers the subject very thoroughly.

The only thing the committee has done this year is to add a feature in the way of a sketch covering the pad which provides for the inlet and outlet for the heaters.

We have also shown in Fig. 3, the method whereby a double flanged pad is secured by rivets to the shell. The upper flange takes the pipe within the tank and a pipe is screwed into the pad, rolled, and then welded, while the pipe extending below the tank is screwed into the pad and then welded.

There is a foot note on that drawing which calls attention to a still more desirable pad. That is, the pipe projecting below the pipe shell can be inserted in the smaller

pad, and that small pad, in turn, secured by studs to the main pad. That is to provide for replacement in case the outside pipe is broken off.

J. Snowden Bell: While the important details of a tank car have been quite fully brought out in the committee's paper and the ensuing discussion, the complete general design of that car does not seem to be dealt with. I do not know whether it is within the function of the com-

mittee, but I would like to ask whether, or to what extent at all, the preparation of a standard design tank car is desirable.

Mr. Chambers: I think that about as far as we can go on standards has already been done. We have specified thicknesses and types of steel and all the things in general construction that go with a regular car.

*The report was accepted and referred to letter ballot.*

## Report of Committee on Loading Rules

It is noticeable that all departments of steam railroads are giving attention to the greater utilization of equipment. The consideration given this subject by the Committee on Loading Rules is indicated by the proposed changes in the table under Rule 23 which will tend to promote the increased serviceability of cars.



R. L. Kleine  
Chairman

One of the important features of the committee's work each year is unquestionably the meetings held with shippers in the steel and automobile industries who have occasion to ship large quantities of sheet steel in box cars. The results of trial loadings under new methods of storing and bracing will be studied before recommending changes in the loading rules.

During the past year, your committee held a number of meetings with the shippers of sheet steel in box cars and trial loads embodying new suggestions of stowing and bracing were sent out and the results studied. The customary annual meetings with the shippers in the steel and automobile industries were held and your committee desires to express its appreciation of the assistance and cooperation tendered by the shippers.

In order to keep pace with the state of the art, it is essential that your committee authorized trial shipments of new methods of loading, after approving such methods, in order to ascertain the merits and safety of the loads before recommending a change in the loading rules, and your committee has assumed that there is no objection to this procedure.

The following changes in the rules and cuts are herewith submitted for your approval and submission to letter ballot for adoption by the Association:

### RULE 5

*Proposed form:* Where maximum weights of lading are not specified, the following will be allowed:

Marked Capacity of car	Total weight of car and lading	Load weight
40,000	66,000	66,000 less light weight of car
60,000	103,000	103,000 less light weight of car
80,000	136,000	136,000 less light weight of car
100,000	169,000	169,000 less light weight of car
140,000	210,000	210,000 less light weight of car

*Note:*—Where cars are marked with "capacity," they can be loaded to the above "Load Weight Limits" except where other load limit markings are stenciled on the cars.

*Note:*—Cars of odd capacity must be classed according to axles under cars.

M. C. B. Standard  $3\frac{3}{4}$  by 7 in.—40,000 lb. capacity

M. C. B. Standard  $4\frac{1}{4}$  by 8 in.—60,000 lb. capacity

M. C. B. Standard 5 by 9 in.—80,000 lb. capacity

M. C. B. Standard  $5\frac{1}{2}$  by 10 in.—100,000 lb. capacity

M. C. B. Standard 6 by 11 in.—140,000 lb. capacity

The rule is revised to conform with the limits of Interchange Rule 86.

### RULE 8 (b)

*Proposed form:* Rule 8 (b). On all cars, one truck will not be allowed to carry more lading than one-half of the load weight as defined in Rule 5. In case of doubt, this must be verified by weighing.

Rule changed to conform with proposed change in Rule 5.

### FIG. 67—RULE 9 (c)

*Proposed:* Fig. 67 will be modified in the next reprint of the Loading Rules to show bearing-piece on middle car located between center of car and center of truck.

The change is made in order to conform with the load weights permitted under Rule 9 (c).

### RULE 13—FIRST PARAGRAPH

*Proposed form:* The width of overhanging load placed on single cars must never exceed the following dimensions as a maximum and the load must be governed by the total length of lading and weight limits prescribed in table under Rule 23 for the length of car used.

The rule has been revised to conform with additional lengths of material recommended for table under Rule 23.

### TABLE UNDER RULE 23

*Proposed:* The table under Rule 23 has been revised to permit longer material loaded on the various lengths of cars. The 50-ft. car has also been added to the table.

#### MAXIMUM WEIGHT OF LOAD—FOR LOADS AS PER FIGS. 7, 8, 9, 23, 24, 52, 54 AND 55

Length of car over end sills	Average length of material	Capacity of car 60,000 lb.	Capacity of car 80,000 lb.	Capacity of car 100,000 lb.	Capacity of car
34 ft.	46	40,000 lb.	51,000 lb.	72,000 lb.	
36 ft.	50		52,000 lb.	70,000 lb.	
38 ft.	52		53,000 lb.	72,000 lb.	
40 ft.	54		54,000 lb.	72,000 lb.	
	56		52,000 lb.	69,000 lb.	
42 ft.	56		56,000 lb.	76,000 lb.	
	58		54,000 lb.	73,000 lb.	
44 ft.	58			77,000 lb.	100,000 lb.
	60			74,000 lb.	96,000 lb.
	62			71,000 lb.	92,000 lb.
46 ft.	60			79,000 lb.	102,000 lb.
	62			76,000 lb.	98,000 lb.
	64			73,000 lb.	94,000 lb.
48 ft.	62			81,000 lb.	103,000 lb.
	64			78,000 lb.	99,000 lb.
	66			75,000 lb.	96,000 lb.
50 ft.	50			111,000 lb.	141,000 lb.
	52			106,000 lb.	134,000 lb.
	54			101,000 lb.	128,000 lb.
	56			97,000 lb.	123,000 lb.
	58			93,000 lb.	118,000 lb.
	60			89,000 lb.	113,000 lb.
	62			85,000 lb.	109,000 lb.
	64			81,000 lb.	105,000 lb.
	66			78,000 lb.	101,000 lb.
	68			76,000 lb.	98,000 lb.

The increased lengths of material added to the table will permit longer loads on single cars within the limits of safety, thus increasing the serviceability of the cars. The 50 ft. car has been added to the table to take care of equipment now coming into use.



## RULE 153 (a)

*Proposed:* Mine props, fence posts and similar material may be loaded in tiers for full length of car if three pairs of side stakes are used to each tier, with stakes wired together at top of car sides and at top of load and pieces not less than eight (8) inches high are used to elevate the end tiers. See Fig. 33-A.

The proposed method of loading is provided to cover operations where material such as mine props is loaded into the cars in bulk by hoisting machinery.

## RULE 202

*Proposed:* Figs. 44, 44-A, 44-B, 44-C and 44-D will be modified in the next reprint of the Loading Rules to show two (2) by six (6) in. timbers extending from top of car side to top of lading to prevent creeping of the plates.

The change is made in order to have the figures conform with requirements of Rule 202.

## RULE 202—THIRD PARAGRAPH, LAST SENTENCE

*Proposed form:* When used, the size of bearing-pieces is optional but they must be located opposite each post and those on floor must be of sufficient length to be supported by two longitudinal sills under floor of car. Longitudinal shifting of the plates should be prevented either by stop blocks spiked to side and floor of car, stop blocks bolted to side of car or horizontal tie rods across the car.

Wording of rule is revised to provide that short bearing-pieces used under inclined plate loads to facilitate loading and unloading shall be of sufficient length to be supported by two longitudinal sills.

## RULE 203—THIRD SENTENCE

*Proposed form:* Side motion to be prevented by not less than three (3) clamps constructed as shown in Figs. 45 or 45-A.

Three pairs of clamps are necessary to insure safety of the load.

## RULE 217

*Proposed form:* When the lading consists of very flexible material such as plates, no bearing-piece is required on the floor of the car, but blocking as prescribed by Rule 213 must be used to protect the end boards.

The other end of the load must rest upon a bearing-piece square or round, preferably square, not less than eight (8) by ten (10) in. if square cornered, nor less than ten (10) in. in diameter if round, for loads of over one-half (1/2) the capacity and proportionately smaller for less weight of lading. This bearing-piece may rest on top of car sides within one (1) ft. of either side of center line of car body bolster on cars having wooden sides not more than fifty (50) in. high and not less than three (3) in. thick, or on top of steel sides especially reinforced to carry such top loads. For floor loads the bearing-piece should be placed on the car floor over the car body-bolster or between the car body-bolsters, except that for flexible material the bearing-piece may be located twelve (12) in. beyond bolster on steel and steel underframe cars. Bearing-pieces on top of car sides must have ends notched for the side boards and be securely braced to prevent both lateral and longitudinal motion, as well as bending and rolling. Figs. 55, 56 and 57 show substantially how bearing-pieces are to be supported and held in place. Steel gondola cars, suitable for carrying loads on top of car sides as shown in Fig. 55, should have fifteen-sixteenths (15/16) in. holes spaced twelve (12) in. center to center, drilled in top side angles on each side of car and located six (6) in. each side of center line of car body-bolster. Lading must not be placed on top of wooden cars having sides less than three (3) in. thick or steel cars having sides not of sufficient strength to carry the lading.

Rule has been revised to permit bearing-piece on floor of car to be located 12 inches forward of car bolster when loading flexible material on steel and steel underframe cars. This change in location of bearing-piece will assist the shippers in getting the required four (4) in. clearance between lading and floor of car or end gate.

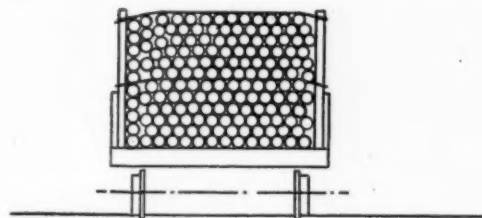
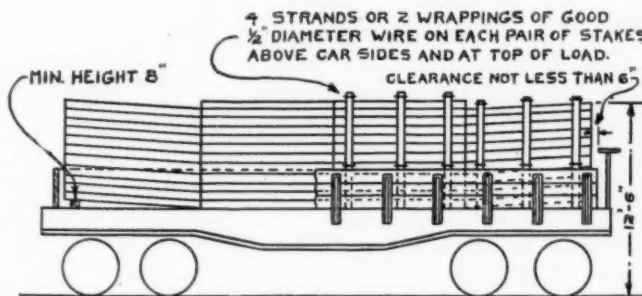
## RULE 221

*Proposed form:* The idlers used with loads as shown in Fig. 52 must be flat cars unless the width of the overhanging load is less than the width given for each length of overhang in the table of General Rule 13, by an amount equal to the difference between twelve (12) ft. (6) in. and the inside width of gondola car used.

The change in the rule is made to overcome some actual interferences that developed in moving cars around curves.

## RULE 223

*Proposed form:* This method of loading as shown by Figs. 58, 59 and 60, may be made use of to load long lattice girders, columns, one-half roof trusses and similar material, that would be injured if loaded on more than one (1) car. The total length of material loaded in this manner shall not exceed twice the distance between center of trucks of carrying car plus five (5) ft. where the material is of uniform weight throughout its length. Where the material is of special constructions with light overhang, a length of overhang not to exceed seventy (70) per cent. of the distance



Loading of Ties, Fence Posts and Similar Material on Gondola Cars

between center of trucks of carrying car will be permitted. In all cases the limits in Rules 13 and 221 for length, width and height of overhang shall not be exceeded. From a point of safety in transit, it is a very undesirable method and should be used only when absolutely necessary. A maximum limit of 80,000 pounds is placed on loads of this character.

The word "between center of bearing-pieces" is changed to read "between center of trucks of carrying car" to clarify the meaning of the rule.

## TABLE UNDER RULE 238

The proposed changes in the table will permit a slight reduction in the material used for blocking and bracing without impairing safety.

## RULE 302—FIRST AND SECOND PARAGRAPHS

*Proposed form:* Lading of this description eight (8) ft. or less in diameter, when loaded on single flat or gondola cars, should be substantially chocked with side blocking in height equal to one-seventh (1/7) the diameter of the shell, providing that blocking of more than ten (10) in. in height will not be required. End blocking to be not less than four (4) in. in height and cut to fit the contour of the tank head. See Fig. 99.

Lading over eight (8) ft. in diameter, when loaded on single flat or gondola cars with sides less than thirty (30) in. in height must be substantially chocked with side blocking not less than ten (10) in. in height and backed up by the use of stakes in the pockets, and in addition to this must be secured with two (2) iron or steel bands of not less than three-quarters (3/4) in. in diameter, or flat bands of equal sections. End blocking to be not less than six (6) in. in height cut to fit the contour of the tank head and bolted to the car floor and securely cleated. See Fig. 100.

A requirement has been added to the rule that end blocking be cut to fit the contour of the tank head. It has developed that tanks are being dented where they come in contact with the top edge of square end blocking.

This report is signed by R. L. Kleine (chairman), assistant chief

PROPOSED FORM UNDER RULE 238

Name	Designation	Wanted No.	For girders weighing not more than 30,000 lbs.	For girders weighing more than 30,000 lbs. and not exceeding 72,000 lbs.	For girders weighing more than 72,000 lbs. and not exceeding 115,000 lbs.	For girders weighing more than 115,000 lbs. and not exceeding 200,000 lbs.
Bolster	A	1	8" x 10" wide x 9' 6"	10" x 14" wide x 9' 6"	12" x 16" wide x 9' 6"	14" x 20" or 12" x 22" or the equivalent in steel
Bolts Securing Strut						
Top Irons	T	4	3/4" Diameter	3/4" Diameter	3/4" Diameter	3/4" Diameter
Strut Top Irons	U	2	6" channels or angle, 4' 6" long	6" channels or angle, 4' 6" long	6" channels or angle, 4' 6" long	6" channels or angle, 4' 6" long
Bolts Connecting Strut						
Top Irons	V	2	3/8" Diameter	3/8" Diameter	1" Diameter	1" Diameter

of motive power, Pennsylvania System; R. H. Dyer, general car inspector, Norfolk & Western; E. J. Robertson, superintendent car department, Minneapolis, St. Paul & Sault Ste. Marie; Samuel Lynn, master car builder, Pittsburgh & Lake Erie; Ira Everett, chief car inspector, Lehigh Valley; G. R. Lovejoy, master mechanic, Detroit Terminal Railroad; T. O. Sechrist, assistant superintendent machinery, Louisville & Nashville; A. McCowan, assistant general superintendent car equipment, Canadian National Railways.

### Discussion

R. L. Kleine (Penna.): Referring to the question of sheet steel loaded in box cars the committee expects to conclude this trial before the report goes to letter ballot and it will be included in the letter ballot.

The Chairman: Just recently I had a case brought to my attention where a number of tanks 30 in. in diameter were loaded on a gondola with 30-in. sides. Those tanks were loaded, two on the floor and then two again on top of them, with a piece between. No stakes were put on either side of the car to protect the tanks loaded in that way, but, on the contrary, telegraph wire was attached to the side edge of the car and then wrapped around the tanks. The surging of the train and the rocking of the car resulted in cutting the wire loose from the side of the car, and the final result was that the tanks were distributed along the railroad.

W. J. Owen (P. & P. N.): Under Rule 152 of the Loading Rules it is not permissible to load lumber less than 12 ft. long on flat or gondola cars higher than the sides. Will this new rule permit the loading of lumber less than 12 ft. in length, such as posts and similar material?

Mr. Kleine: There is no limit on the length of the lumber, mine props, fence posts and so forth that may be loaded in accordance with Rule 153. The rule gives no instruction excepting that it must have three pair of stakes per pile and be higher than the top of the stakes.

Mr. Owen: Does this rule cover ties and other similar lumber less than 12 ft. in length?

Mr. Kleine: Yes.

T. J. O'Donnell (Chief Interchange Inspector):

The rule on doorway protection of closed cars is far from perfect. Furthermore, we are getting in the neighborhood of 300 or 400 cars a month in our district on the Niagara front where nobody puts in the proper cooerage to protect the lading to its final destination. This is causing serious delay to the equipment and costing a lot of money. When we charge the initial road the actual cost for doing this work invariably they come back and question the expense. Something should be done so that when we submit our bills in good faith they will be accepted by the mechanical department of the road that originated the car load. They come back from the auditors. They don't refer them to the mechanical department. If the mechanical department were asked if the bill was proper, I think we would overcome the returning of a lot of bills that we are now getting back, causing anxiety and untold correspondence.

The Chairman: Before discussing this matter further the secretary will read from the interpretations that were discussed here today.

The Secretary: The Car Service Committee of the Transportation Division and the Arbitration Committee of the Mechanical Division have been considering Car Service Rule 14, section E in its relation to Interchange Rule 2, section H, on the inside door protection and have approved the following two interpretations which will be included in the interchange rule supplement issued the first of July. These interpretations follow:

(4) Q.—If shipment originates on a switching line acting as agent for a connecting carrier, is the switching line considered the road on which the shipment originated

or is the carrier considered the road on which the shipment originated?

A.—Bills should be made against the road haul line issuing the original billing, and any settlement between that line and the switching line should be made by special arrangement.

(5) Q.—We are receiving bills from various roads but are unable to pass these bills for payment account of lack of sufficient information to enable us to intelligently check, principal difficulty being inability to determine whether or not load actually originated with us. I would suggest that the rule be amended to provide that copies of revenue waybills, in addition to the car transfer check, must accompany bills in support of charges for the services referred to.

A.—It is sufficient to make reference on bills covering this work, to station, date and serial number of waybill.

On motion of Wm. McMunn (N. Y. C.) the report was accepted and ordered submitted to letter ballot.

## Report on Safety Appliances

The Chairman: The next report before this session is that of the Committee on Safety Appliances, which will be made by Mr. Chambers.

Mr. Chambers: There is no written report of the Safety Appliances Committee, not that the committee has not done anything in the last year or two, but there has been no change whatever in any of the safety appliances with respect to equipment. Therefore, we have no report to make.

A. E. Smith (Union Tank Car Co.): I would like to ask why it is necessary to maintain the stencil the reference to safety appliances on our cars. As all cars must conform to that it is an unnecessary expense.

Mr. Chambers: I think Mr. Smith is as familiar as I am with the fact that that is only complying with the United States law. I do not see any reason for it, but we cannot change it until the Act is amended.

On the motion of Mr. Kleine the report was accepted. The meeting then adjourned.

## Meeting of Penn State Alumni

THE ALUMNI of State College, Pennsylvania, who are attending the convention, held a meeting at the Hotel Dennis Tuesday evening. Plans were made for having an informal reunion and dinner at future conventions. A large number of graduates of the School of Engineering, particularly those who completed the course in railway mechanical engineering, are now engaged in railroad and railway supply work.

## Big Improvement Programs

ACCORDING to newspaper reports, the Union Pacific has announced that its program for improvements in 1924 will exceed \$29,500,000. This includes \$6,128,000 for equipment, \$2,512,000 for shops, machinery, etc., \$1,934,000 for terminal facilities, \$1,204,000 for water and fuel stations, and \$688,000 for automatic train control. Included in the new equipment is an item of twenty Mallet and ten 2-10-2 freight locomotives.

It is also announced that the Pere Marquette program includes \$1,000,000 for the completion of engine terminals and train yards and \$930,000 for 300 refrigerator cars.

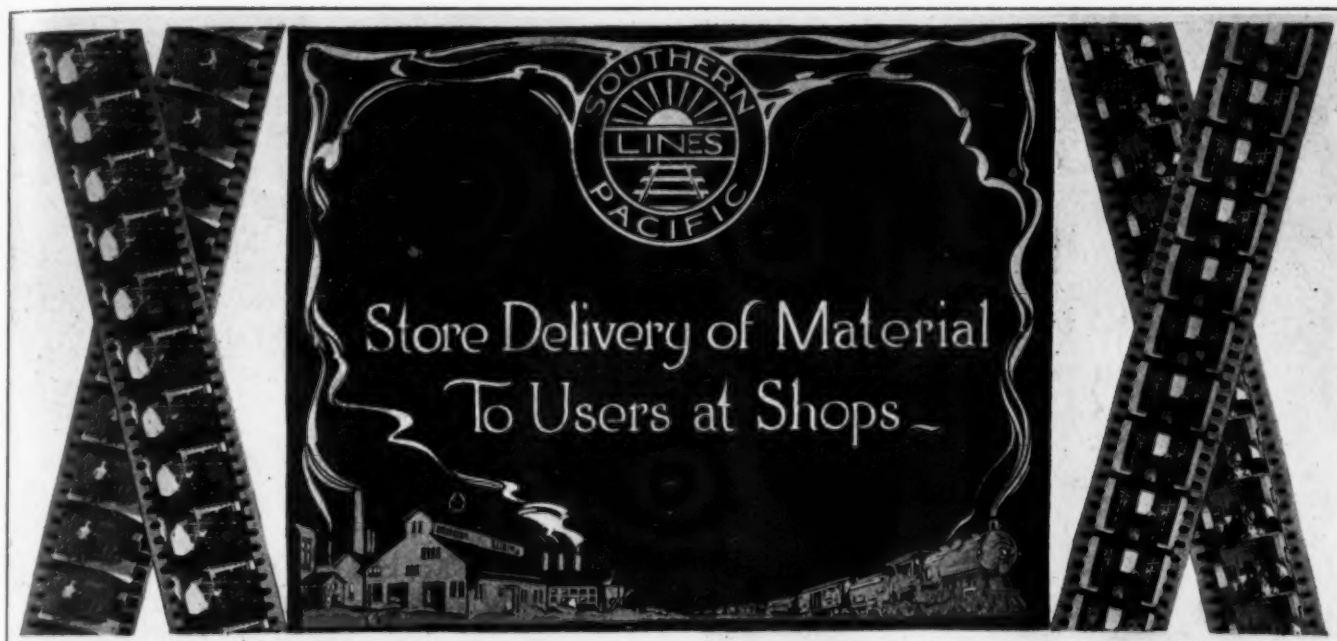


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## Division VI—Purchases and Stores—A. R. A.

### Motion Pictures and Reports on Important Stores Department Operations Feature Second Day

**T**HE SECOND day's session of Division VI was called to order by Chairman Hall, at 9 a. m. Reports of three committees were presented, one being featured by the use of stereopticon views and the other two with motion pictures. One of the motion pictures illustrated the

actual operation of the store's delivery of material to users at shops. The other was on supply train operation. Four special subjects were presented covering placing of purchase orders, economies in distributing forest products, unclaimed freight and duties of a traveling storekeeper.

### The Placing of Purchasing Agents' Records

By J. D. McCarthy,  
General Purchasing Agent, Minneapolis & St. Louis

Under modern business and traffic conditions, the making of purchase orders requires the detailed consideration of a number of factors. These factors are outlined in the special paper which has been prepared by Mr. McCarthy. In the order in which he has discussed them they are quantity, description, price, delivery, f. o. b. point, terms and routing. Exceeding care should be taken by the staff of the purchasing agent to

see that the quantities are properly within the requirements of the railroad, and that the descriptions are complete, carrying the full information, and when necessary, supported by drawings and specifications. All requisitions should be registered on receipt and where inquiries are necessary, they should be mailed the same day. Where none are required orders should be gotten out the same day or on the second day at the latest.

The railroad's chief purchasing officer should negotiate, consummate and authorize the purchase and delivery of all company material by contract or order. The purchasing officer of a railroad and his staff are essentially a department of procurement. It is their purpose and desire to expeditiously deliver to the proper points on the railroad, the necessary quantity of the proper kind of material.

Great care should be taken by those on the purchasing officer's staff, who have to do with the placing of orders, to see that the quantities are properly within the requirements of the railroad; that descriptions are complete, carrying full information, and where necessary, to be supported by drawings and specifications.

The subjects to be considered when placing an order are as follows:

*Quantity:* That quantity is correct.

*Description:* That description is complete in every detail. It

is well to remember that the order is the last link between the technical department of the railroad and the manufacturer, or the concern that is to fill the order. When an order leaves the hands of the railroad, it goes into the order filling department of another concern whose magnitude is perhaps as great or greater than the railroad and has thousands of articles to handle daily: if the description is proper, the order can be filled with very little delay or inconvenience.

*Price:* That price is correctly stated or reference made in such a way that the price is definitely established, by reference to quotation or contract.

*Terms:* It is well to establish the question of cash discount at the time the order is made, which will avoid misunderstanding and controversy after order has been filled and invoice rendered.

*F. O. B. Point:* F. O. B. point should always be established on the order.

**Delivery:** Time of delivery is helpful to the manufacturer, also giving necessary information to officers in charge of work, for which material is being ordered.

**Routing:** It is often to the decided advantage of the purchaser to dictate the routing of material purchased, which is also helpful to the traffic department, enabling them to have thorough knowledge of the movement of company material, that they may use said information for reciprocal consideration by other carriers where possible.

Final examination of order in purchasing agent's office should indicate that these subjects have been carefully considered.

Upon the arrival of requisition in the office of the purchasing officer, same should be registered and put into work just as soon as possible. When it is necessary to request quotations, all inquiries should be mailed the same day requisition is received. When requisitions are passed upon for purchase, orders should be gotten out the same day if possible and at latest the following day.

Copies of all orders should be mailed to the maker of requisition, and copy retained in the office of purchasing officer for his record. In case of special requisition for machinery, or extensive expenditures such as coal chutes, rail, etc., copy of order should be sent to the chief engineer, superintendent of motive power, or other officer who may be directly interested in the carrying out of the terms of the order.

### Discussion

C. D. Young (Penna.): What is the reason for sending a storekeeper a copy of a purchase order? They are not concerned with material until it is delivered to them by the purchasing department. It is a function, it seems to me, of the purchasing department to deliver the material to the destination prescribed on the requisition by the purchasing department and it is not up to the storekeeper to trace shipments and look after the duties peculiar to the department of purchase.

W. Davidson (I. C.): We want a copy of those orders, for the reason that we do take occasion to check every consignee order—we call it consignee notice—against our requisition and find the number of clerical errors the purchasing agent makes. In addition to that, it helps us in tracing material on our tracing desk. Those orders are placed there and we know where they are placed before we start the tracing. Sometimes we don't go to the purchasing agent to trace it. We send a special man out, when it is in a vicinity near the storehouse, and get the material quickly.

W. G. Phelps (Penna.): One of the dangers of sending a copy of the order to the storekeeper is that they will trace. While the rule of the road may be not to trace it, and that all the tracing is to be done through the general storekeeper and from him through the purchasing department, the man on the ground is very likely to take it in his own hands and trace, and at the same time the purchasing agent may be tracing it. For that reason, I think unless you are sure that your storekeeper will not trace it, it is better for him not to have the copy. But there are other reasons why he should have a copy. One is so that he will know that the order has been placed. However, the price should not be on his copy of the order.

E. W. Peterson (Ban. & A.): I would like to ask Mr. Phelps why he objected to the storekeeper knowing the price? It is vital on price books and comparisons he is obliged to make.

Mr. Phelps: One of the reasons is that I dislike to have the representative of the manufacturer come in to me and tell me what price I am paying. I have men come to me very often and tell me just exactly what I am doing. I will ask him where he got his information, and he says, "I got it on the road from the storekeeper." I don't think a man in here ever gives anything away. Where he gets his price is from the invoice only and not from the order. Of course, he gets it eventually, but after the material. If he gets the order and the representative of the company comes around and he has not the material yet; he goes to the order for information when the representative was

there. There are some people who will tell the price. I do not think it should be given out. There may not be any secrets about it, but the price should not be given out, especially to any competitor.

H. H. Laughton (Sou.): On our line, the stores department is furnished with a copy of the purchasing agent's order on which he shows the price. There is no secret about it. The man gets the invoice eventually so he knows what he is going to pay. We also trace for the material by using a form which has the name of the purchasing agent signed to it. That reply comes to the purchasing agent department and it is transmitted to the general storekeeper. I don't know that the storekeepers leak any more information than the file clerks in the purchasing agent's office. But even if they do, what is the objection. We are all trying to buy the material at the cheapest price. If the fellow didn't get the order, that is a good reason why he didn't. There is no secret on our line between the purchasing and stores departments. We have no objection to either one of them knowing the price or to do tracing. What we are after is getting the material and rendering service.

W. E. LeFaivre (D. & R. G. W.): We have used the system of sending our storekeepers a carbon copy of the order. We find it very beneficial. The initial tracing is done by the storekeeper with a carbon copy to my office. If the question gets acute, then I get into the game. As far as the price is concerned, it eventually goes to the storekeeper for his price book and where contracts are made, we have a copy of the contract and on such orders no price is shown. We find it very beneficial.

A. W. Munster (B. & M.): I think it would be well to have an expression from the convention as to how many railroads send copies of the orders to storekeepers and how many do not.

The Chairman: Mr. Munster would like to see those roads that send copies of purchasing agent's orders to the storekeeper. One representative from each road that so handle their purchasing orders, please stand. About 50 arose. Each road that does not handle copies this way, please stand. About 12 arose.

D. C. Curtis (C. M. & St. P.): In the railroads with the immense amount of correspondence and papers that we handle, we are apt to set up a disease that is worse than the disease we are trying to cure. There are so few orders lost between the general storekeeper and the purchasing department that I am wondering if we don't send out an immense amount of paper and take immense amounts of filing space and considerable clerical time to take care of all these orders that are going back to the storekeeper. We have all said in these meetings that the function of the purchasing department was to procure the material and it strikes me that we are taking a function away from the purchasing department when the storekeeper starts to deal with the manufacturer and the man that is furnishing the material. That seems to me to be the purchasing agent's function and not the store departments.

A. A. Goodchild (C. P. R.): There is a principle involved in this question. We have always recognized the separation of the stores department function from those of the purchasing department, and it has been my desire always to keep our stores department employees entirely separate and away from all connection with the manufacturer and the merchant.

F. D. Reed (C. R. I. & P.): The purchasing and stores department should work together. All of us should work toward the best results consistent with the location on our railroad. There is no objection that I can see to the store department or consignee securing the price of the commodity. He is going to get it ultimately.



## Report of Committee on Forest Products



**J. H. Waterman**  
Chairman

It was the recommendation of this committee that until the Department of Commerce in conjunction with the manufacturers of lumber agree upon standard sizes, railroads purchase their requirements based upon the commercial specification regardless of for what purpose intended, for the following reasons: First, as to grade all lumber purchased and used by railroads today, regardless of what species, grade, or purpose intended, is covered by and included in the specifications compiled and issued to the general trade by the various lumber associations from which railroads through necessity procure their requirements. The commercial specification is the basis of all specifications now used by railroads insofar as grades are concerned.

Second, as to sizes, in the judgment of this committee, it is deemed highly impracticable to set up a schedule of standard sizes of lumber to be used by railroads in repairs to equipment until such equipment has been standardized.

The above does not refer, however, to dressed and matched lumber, which has been standardized and in universal use by all railroads, neither could a recommendation be made with regard to maintenance of way and structures, as the requirements of various roads are not the same, some requiring light construction of bridges, while with others the heavy type is necessary. Therefore, if the engineers of both motive power and maintenance of way departments would be consistent in specifying their needs, showing actual sizes required for the purpose, no difficulty should be experienced by the purchasing and stores departments in procuring lumber of a satisfactory character through specifying commercial grades in all cases and actual sizes at all times.

It is the recommendation of this committee that the commercial or association specifications be used as below listed:

### Standard Lumber Specifications

#### SOFTWOODS

Northern White Cedar Association.  
Western Red Cedar Association.  
West Coast Lumbermen's Association.  
Southern Cypress Manufacturers' Association.  
Northern Hemlock and Hardwood Manufacturers' Association.  
California White and Sugar Pine Manufacturers' Association.  
Georgia-Florida Sawmill Association.  
Northern Pine Manufacturers' Association.  
North Carolina Pine Association.  
Southern Pine Association.  
Western Pine Manufacturers' Association.  
California Redwood Association.

#### HARDWOODS

American Hardwood Institute.  
Michigan Hardwood Manufacturers' Association.  
National Hardwood Lumber Association.  
Northern Hemlock and Hardwood Manufacturers' Association.  
Maple Flooring Manufacturers' Association.  
Oak Flooring Manufacturers' Association.

The committee desires to go on record, stating most emphatically, that the entire matter of grade depends upon inspection placed upon the lumber at time of loading on cars or upon receipt at destination, by thoroughly competent railroad inspectors who have been trained in the interpretation of lumber specifications and can make inspections in accordance therewith. To permit the average yard, shop, or maintenance of way employe to inspect lumber is an economic waste and decidedly expensive to the railroad. This refers particularly to the small roads that do not have regular inspection force, also to trunk lines where the inspection force is inadequate during rush periods.

In placing orders for board and plank stock, widths and lengths should be specified in standard cutting; namely, widths 6 to 12 in., lengths 10 to 16 ft. Odd lengths and widths should not be ordered, except for some special use where standard will not answer the purpose. As a rule, it is impracticable, therefore expensive, to order boards or plank all of one width or length, as a premium must be paid to procure any special assortment of widths and lengths.

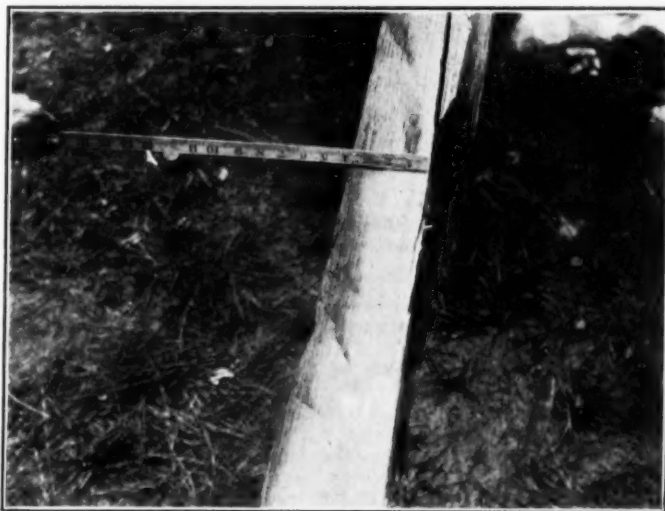
Where pine and fir lumber are intended for preservative treatment before use, a heavy percentage of heart wood is not practicable, as the proper treatment of sap wood makes it equal to and in fact superior to heart wood untreated. A premium must be paid for standard heart lumber. If, however, the lumber is to be used untreated and where exposed to the weather, specific heart contents should be specified.

As mentioned in the first paragraph of this report, the foregoing was recommended as applicable until the Central Committee Department of Commerce has completed its report on lumber standards.

Since the above report was compiled and submitted to the General Committee, it has been found that the Central Committee of the Department of Commerce on lumber standardization has completed its report to cover yard stock, and in connection with the work of the above mentioned committee, we take pleasure in submitting the following as general information.

### Lumber Standardization

Under the auspices of the U. S. Department of Commerce, Division of Simplified Practice, the standardization of lumber has



**A Tie 3¾ in. Thick Accepted as a No. 3—Typical of Several Hundred Ties in this Yard**

progressed considerably during the past two years, through work by representatives of producers, distributors, and consumers operating jointly in the central and the consulting committees on lumber standards. The work so far completed is covered by two pamphlets, dated December 13, 1923, and May 1, 1924.

The importance of this development in the merchandizing of lumber will be appreciated by the members as influencing future practices. The attention of the members is called to the fact that the American Lumber Standards adopted to date go into effect July 1, 1924. Our ideas should be adjusted to the new arrangements, which comprise shipping and inspection conditions for all kinds of lumber, but grades and sizes for softwood yard lumber only. The latter class of material was standardized first because it constitutes the bulk of the lumber consumed. Railroads use enormous quantities of softwood yard lumber in building construction, and so are interested in what has been accomplished in the simplification of grades to a total of 9 and of sizes to 50 per cent. of those which have prevailed.

Further progress is to be expected. Within a short time recommendations as to standard structural timbers will be issued, since the basic grading rules are already worked out. Factory or shop lumber is the next item for consideration, and car lumber is classed with this material or as a specialty.

The association of lumber manufacturers which has sponsored the standardization of lumber, are understood to be preparing new grading rules for issuance July 1, 1924, in accordance with the American lumber standards.

### Facilities for Handling

Lumber is one of the largest items railroads carry in stock and one of the largest investments in a single class of material. The storing of lumber has been pretty thoroughly covered in previous reports of this section. The land selected should not be

low, wet or swampy, but dry and covered with cinders so that when the lumber is properly piled it will season at the bottom of the pile as well as at the top.

Ample space should be provided so as to properly segregate the various kinds and sizes of lumber and provide an extra piling or storing place for each size in order to have a receiving pile and an issuing pile. In this way old stock is not accumulated. Adequate track layout should be provided to suit the geographical



**Two Ties Accepted as No. 3 (6 in. by 8 in.) More Than an Inch Scant in Each Dimension—Typical of at Least 5,000 Ties in Yard, Taken up by Chief Inspector**

location of the particular lumber yard. As lumber products are a fire hazard, they should be stored at a safe distance from shop buildings.

A review of the various items of material handled on the railroads indicates more effort and energy should be devoted to methods and equipment for economical handling of lumber and forest products.

The same situation confronts the lumber producers, but it is not due to lack of progressiveness, but is due to the nature of the material to be handled. The average railroad lumber yard has in stock a large number of different articles or units to handle, taking into consideration the various kinds of woods and various combinations of grades, length, width and thickness. When an order is received it may call for comparatively few pieces of different sizes, length and grade, and as they are all comparatively light and can be handled without the assistance of machinery, the system of using manual labor for this work has much in its favor.

There has, however, in the past few years been a marked development in mechanical handling equipment for forest products. This development was first started by the lumber manufacturers, who had to handle timbers that were too large to be handled manually. Many types of small stationary derricks and mechanical handling methods were tried. The familiar types of cranes for various industrial purposes are not particularly well adapted for handling lumber and forest products, owing to the length and bulky size of these products and the awkwardness encountered in handling the pieces rapidly.

The storage space required for the average size stock is of such a great area that the capital investment in crane equipment for covering the area is necessarily high. Locomotive cranes or tractor cranes are very efficient in handling heavy timber and piling, also for handling ties and lumber. This machine as well as being able to lift and carry heavy loads could also be used as a switch engine for switching cars around the lumber yard. The overhead traveling type crane is used successfully by many large lumber producers as well as some railroads. This type of crane has the advantage over the locomotive crane of permitting every square foot of area between the crane runway rails to be used as storage space.

Owing to limited space at some yards it is necessary to make the piles high, in which case a lumber piler made in different styles could be provided. These are made to operate on a track as well as on plain wheels, movable to any part of the yard.

In piling lumber it is desirable that the piles be of uniform appearance. It is recommended that each yard be provided with a piling gauge which can be easily made. The yard alleys or roadways should be kept in repair. Good roads are necessary to economical handling.

Most lumber yards are equipped with suitable tracks and timber dollies. Another device which could be used to advantage at a railroad lumber yard is the car door lumber roller, which enables a man to handle quickly in or out of the car such items as siding, flooring, lining and similar finished stock.

In conclusion the committee would state that individual treatment by one with practical experience should determine the facilities which are required at any particular yard.

### Inspection

The committee concurred fully in the principle of standard specifications and co-ordinated inspection advocated by the Special Committee on Joint Inspection of Standard Materials in its report presented in May, 1923. While the Special Committee on Joint Inspection of Standard Materials did not refer specifically to forest products among the items mentioned in their report, still this class of material lends itself readily to the application of the general principle.

Forest products are produced over wide areas of territory and under widely-varying conditions, and without controlled supervision it is practically impossible to maintain a uniform application of specifications. Cross-ties are now procured under a single standard by 95 per cent. of the railroads, and lumber and timbers will soon be standardized for all consumers.

The committee, therefore, was of the opinion that the American Railway Association establish some means of familiarizing itself with the inspection of forest products, beginning with cross-ties, for the purpose of insuring a uniform application of the standard specifications, thereby stabilizing the tie industry and reducing the cost of production, and to this end, recommended that this movement be carried on by Division VI—Purchasers and Stores, which should bring to the attention of railroads any departure from A. R. A. standards by their inspectors, until such time as it may be found advisable to constitute an organization devoted to that work.

"Your committee, therefore, is of the opinion that the American Railway Association establish some means of familiarizing itself with the inspection of forest products, beginning with crossties—which should bring to the attention of railroads any departure from A. R. A. standards by their inspectors until such time as it may be found advisable to constitute an organization devoted to that work," and that the General Committee shall be empowered to appoint a reviewing committee on the subject of forest products inspection, desires to report as follows: The purpose



**Three Ties in Top Tier Less Than 5 in. Thick and One Badly Decayed as Indicated by Chalk Marks, Accepted as No. 6 (U. S. R. A. No. 3)**

of this committee is to receive and pass upon complaints from members that the inspection of forest products is not being carried out in a manner to insure uniform application of the standards of this Association. This committee shall be composed of not less than three nor more than five members, who shall hold office for a term of three years. Not more than one-half of the membership shall be changed in any one year, to insure continuity of a portion of the committee, and to so provide, the first appointments shall be on the basis of 1, 2 and 3 years, service.

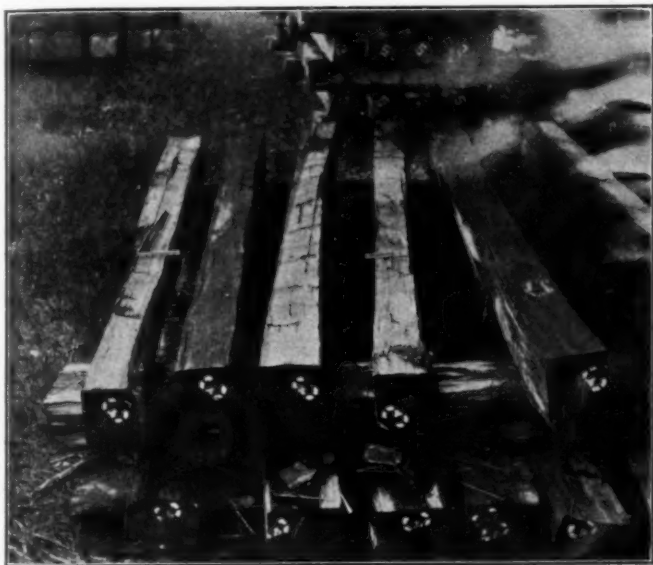
It shall be the duty of this committee to receive complaints from any member who believes the inspection of forest products is not being made in accordance with the standard specifications of the Association. Upon receipt of such complaint the Committee shall



develop the facts, and if the investigation sustains the complaint, bring the matter to the attention of the member at fault, with a view to having the necessary steps taken for correction.

Should the member at fault fail to take corrective action at the suggestion of the reviewing committee, it shall be the duty of the committee to disclose all the facts in a duly prepared report at the annual meeting of Division VI. By a vote of the Association in annual meeting, the report of the reviewing committee shall be forwarded to the Secretary of the American Railway Association for the consideration of the executives of that Association.

In the event expenses are incurred by the reviewing committee for the purpose of ascertaining the facts such expense shall be



Five Ties in Yard Accepted as No. 3, All of Which are too Thin to be Serviceable Rejects. Two Were Only 4 in. Thick. Of 7,000 Ties in This Yard, 50 Per Cent. are Over-graded

borne by the member not properly carrying out the specifications of this Association or by the complaining member in case the charge is not sustained by the Committee.

The photographs illustrate the necessity of better supervision of cross-tie inspection:

Committee: J. H. Waterman (C. B. & Q.), chairman; O. V. Daniels (Penna.), S. M. Elder (B. & O.), L. P. Krampf (M. P.), G. W. Lorenz (U. P.), M. M. Moffitt (S. P.), F. V. Weisenburger (N. P.), C. D. Young (Penna.).

### Discussion

John Foley (Penna.): The report reads, "In placing orders for board and plank stock, widths and lengths should be specified in standard cutting; namely, widths 6 to 12 in." Chairman Waterman has recommended that everybody use American Lumber Standards, so that statement which was written before the American Lumber Standards were adopted becomes inconsistent because the American Lumber Standards which go into effect on July 1, provide for widths down to 4 in., and for lengths to 4 ft. I would suggest therefore that there be omitted after the word "cutting" the words "namely, widths 6 to 12 in., lengths 10 to 16 ft."

The Chairman: Mr. Waterman states that that is satisfactory to the committee.

F. D. Reed (C. R. I. & P.): I would move as a modification of the report just made that the last sentence of the report be omitted, as well as the photographs.

A. W. Munster (B. & M.): We ought to have some discussion before taking a vote of the meeting on this question of eliminating these pictures. We have these rotten ties with us and I don't think we should duck the issue.

The Chairman: Mr. Reed, will you re-state your motion?

Mr. Reed: To put it in the proper form, I would make a motion that the last sentence of the committee's report reading, "The following views illustrate the necessity of better supervision of cross tie inspection" be eliminated and also that the views be eliminated.

(Motion carried).

C. D. Young (Penna.): When you vote in favor of the adoption of the report you will be voting to initiate a plan of supervision which, although it carries with it only moral suasion, I am fearful will be the subject of some animated discussion at future meetings. You should understand thoroughly what you are voting for so that you cannot come here next year or the year after, when perhaps you may be the party who has been before this reviewing committee, and say, "I didn't know what we were voting for when we voted to have a reviewing committee go out and find out the facts and bring them before you gentlemen to air out our difficulties and our shortcomings in purchasing material that is not in accordance with standard specifications." This committee is going to be a fact-finding committee. That is all it is going to do. If the fact is developed that a member of this Association is buying material below the grading of the specifications, they are going to call it to the attention of that member. He no doubt at the time will disagree with the views of the committee and say, "I don't read the specifications that way. It is not my understanding that I am buying material below the specifications of the Association, and I think you gentlemen are wrong." Then the matter will come before this committee for review and if this assemblage in the future sustains the judgment of this committee it is going to the railway executives for consideration.

I hope that the convention will accept the report as it is a move in the right direction and the proper way to correct a condition which at times, especially in times of difficult procurement, becomes very bad on certain of the lines.

George D. Yeoman: I don't know of any move that has been undertaken by this Association that is fraught with greater interest to all of the railroads than the effort which is being put forward now to have a supervision of the inspection of railroad ties, a centralized supervision, which will lead to a uniform application of the requirement of the specifications. I don't believe that this Association can take any more important step than the adoption of the report which you have just heard read in regard to the inspection of ties. That is going to revolutionize not only the production of forest products with a resultant influence on the price at which they can be procured but will have a much greater influence on the quality of the material that is used by the railroads in maintaining their tracks and their structures. It is going eventually to put them in a position where there can be no criticism of their action in failing to secure the very best material for the purpose intended.

Mr. Young: Mr. Munster has asked me if I wouldn't cite for the benefit of the members the experience of the Master Car Builders' Association along a somewhat parallel line in the early history of the application of the interchange rules. The interchange rules of the M. C. B. Association are judged on their merits and then reviewed by the arbitration committee, a fixed committee of that association, paralleling in a measure the committee that is here suggested. The arbitration committee at the time of starting of the interchange rules had a great deal to listen to in the way of complaint from members as to the wrong interpretation of those rules. In the last 10 or 12 years, there were very few fundamental questions which came up to the arbitration committee, based upon the long existence of the rules. It is my thought that we will prob-

ably find somewhat the same condition in the application of this committee. The findings of the arbitration committee, that is their decisions on disputed points, become in a measure the code of rules, and the rules are so interpreted after the findings of the committee. This committee passes upon disputes between carriers and then presents the subject to a special session at the convention and by vote of the members the action of the arbitration committee is sustained or referred back to them for further consideration. So we have in this plan a some-

what parallel scheme for entirely a different purpose. In this case we will have close questions; for instance, there may be a disagreement as to the question of what is rot and what is not rot. Those questions will come up before this committee, as to what was the intent of the specifications. I am sure it is only through close co-operation in a fact-finding committee that this question can be started and finally developed into what may be a general inspection bureau.

*The report as amended was accepted by the Division.*

## Economies In Distributing Forest Products

By H. R. Condon,

Assistant Forester, Pennsylvania System



Forest products, for which railroads expend more of their revenue than for any kind of material except fuel, are, with few and relatively unimportant exceptions, bulky and expensive to transport and handle. Consequently any economies that may be effected in receiving and distributing a railroad's requirements of wood should have the earnest consideration of all who may aid in laying down material where it is to be used with the least practicable expenditure of time and effort. To purchase the material called for by a requisition at the least initial expense is not always economy; the cost in place is an important factor in determining value.

Any worthwhile scheme of distribution must be based on an orderly and economical movement of material from producer to user, and while it is recognized that emergency requisitions will be made as long as railroads operate, such demands should be held to an absolute minimum. That desired result cannot be obtained until all users of material are educated to an appreciation of the losses caused by failure to anticipate requirements sufficiently in advance of need to permit of economical purchase and distribution. It is essential, therefore, that material users co-operate in a distribution plan to the extent of forecasting and requisitioning material far enough in advance of need, whenever possible, to permit supply organizations to provide the kind and quantities of forest products desired, when and where needed, and at a minimum cost.

Unsuitable and costly substitutions are too often necessarily used to fill requisitions for delivery "at once." That is particularly true of requirements for preserved wood, which preferably should be purchased and stored for a considerable time before treatment. Hardwoods must be air-seasoned from 6 to 18 months preliminary to adequate preservation, consequently the originator of a requisition for treated hardwoods to be supplied within 30, 60, or 90 days, cannot be supplied with them unless his needs have been anticipated by procurement of the wood well in advance of the request for it, as it is seldom that the required stock is available for purchase in a thoroughly-seasoned condition, and treated material of the various grades and dimensions needed is rarely stocked for sale by commercial organizations. An undesirable feature of attempting to fill requisitions by the purchase of wood already treated is the difficulty of determining whether the wood and its preservative treatment is in accordance with adopted standards.

### Losses Through Lack of Anticipation of Demand

It is unfortunate that there exists in some quarters an apparent lack of appreciation of the extent of losses due to failure to anticipate demands which can be forecasted, even where the extensive use of preserved wood is recognized as profitable practice. Consequently there is used annually very considerable quantities of untreated wood where decay is known to be the primary cause of failure in service, and for which treated wood is desired but unobtainable when required.

While the failure of consumers to make known appraisable future requirements is directly the responsibility of the consumer, purchase and stores organizations do not function prop-

erly unless they exhaust every means to have such requirements anticipated and provided for. There are many items of forest products for which the yearly demand is fairly consistent, and which on some roads are used only after treatment whenever so obtainable. For such materials storekeepers can and should obtain requisitions for stock account, and can have them purchased sufficiently in advance of consumers' requisitions to permit of seasoning and treatment. Comparatively high stock accounts are wholly justifiable when it can be shown that all of the material carried is stock accumulated against potential requisitions and to avoid substitution which will be expensive in terms of annual cost in service. First costs and carrying charges should always be subordinated to cost per year of service.

It is essential that the rate of consumption of forest products be known in advance, as well as the gross quantities needed. Maintenance and construction programs ordinarily can be approximated sufficiently in advance to enable supply organizations to provide the kinds and quantities needed at a rate which will avoid unnecessarily high stocks. Predetermined cross- and switch-tie monthly programs of insertion will enable purchase commitments to be made for delivery at rates which will keep stocks of distributed ties within prescribed limits. The number of distributed ties on hand at any time should be in ratio to proximate consumption requirements, consequently stocks will vary considerably during the year, except for roads on which renewals are made throughout the year in approximately equal monthly installments. It is obvious that the minimum distributed supply that can be maintained without jeopardizing use programs should be considerably less approaching and during periods of little activity in track work than preceding and during periods of greatest activity. Since the rate of delivery of treated ties usually can be more accurately gauged than that of Class U ties, it is possible to safely carry proportionately fewer distributed ties or roads using a high percentage of treated wood than on roads which must depend entirely or principally on somewhat uncertain direct deliveries by tie producers.

### Planning a Schedule for Procurement

A well-informed stores organization having knowledge of the approximate quantities of major requirements for forest products for which specific requisitions will be made upon it can intelligently plan a schedule of procurement and distribution. It will accumulate its stores in locations favorably situated with respect to natural movement of wood from point of production to place of consumption, enabling prompt and economical distribution without expensive backhaul. Wood in bulk for specific jobs will be moved directly to points of consumption, if for use untreated. Less than carload lots will be supplied from stores accumulated at a lower price basis than would be possible by the purchase of numerous small lots, and in less time. Forest products to be supplied treated will be acquired and stored in time to permit of thorough seasoning and preservation. Emergency purchases will be reduced to a minimum. Construction and renewals will not be held up for lack of material, nor will costly substitutions be necessary.

On some roads the distribution of cross-ties is an almost virgin field for marked economies. Cross-ties should never be distributed merely as "ties." Traffic, ballast, and topography of the line to be served must be considered if the maximum service is to be obtained from every tie distributed. While it is appreciated that it is the function of engineers to determine what kind and size of ties are needed for specific track sections, it is nevertheless a fact that a supply organization alive to its responsibilities can and does play an important part in laying down the right tie for the right track. Procurement and distribution will be so regu-



lated that ties of the weaker woods capable of giving satisfactory service in tangent and light-traffic tracks will not be distributed for service in curves or under heavy traffic where they will soon be destroyed mechanically; treated ties will not be furnished for use in tracks where, because of severe mechanical stresses, untreated ties will last as long; untreated ties will not be distributed for service where they will decay long before wear is a factor in their removal, nor will "main track" ties be supplied for a relatively unimportant branch where the track is "main line" solely because it is the only one on which trains operate.

### Proper Precautions for Loading

Problems connected with the economical handling of forest products when they are received cannot be solved satisfactorily unless precautions are taken to have material loaded in such a manner that expensive sorting is unnecessary when the car is unloaded. Those who supply material naturally may be expected to load shipments most conveniently and least expensively unless purchaser's stipulations specify orderly arrangement. As a result of failure to establish and maintain definite practice in loading, consignees oftentimes are put to considerable expense in sorting and rehandling forest products at destination. The simplification of grades and sizes of lumber now approaching conclusion under the auspices of the Division of Simplified Practice in the U. S. Department of Commerce may be expected to lessen sorting and handling expense by a reduction in stock items which will be carried by railroads after the new standards are in effect.

The necessity for obtaining cross-ties properly loaded on cars probably is most acute on Eastern roads which purchase a variety of tie woods of different sizes. Single carloads of right-of-way acceptances are known to have contained 3 to 5 sizes each of 8 species of wood, for use untreated and after treated. At a

wood-preserving plant which recently received two cars of ties loaded the same day at the same place, enough Class U ties were sorted from among the Class T ties to make a full carload for shipment to a divisional point for immediate use. In addition to the cost of the backhaul on those ties, a considerable sum was spent for sorting which should have been done at the loading point, and at an inconsiderable cost. Purchasers should insist on the requirements of the A. R. A. Standard Specification for cross-ties which provide that cross-ties of different lengths, class, or group be loaded in separate cars whenever practicable. When that is impracticable all of each kind in a car should be loaded together. Ties for side or main track use also should be separated whenever practicable.

Shippers can be expected to resist loading requirements which will complicate their problems, or may insist on additional compensation for innovations which they are apt to consider as unnecessary additions to their operating expense, but careful analysis of all costs of handling at destination should be considered before forest products are accepted as they are produced, or after only partial sorting.

Storage yard layout should be planned and executed only after a careful analysis of the kinds and quantities of material to be stored. Haphazard provisions for the handling of bulky forest products in cramped space and with inadequate facilities are certain to be costly. Failure to provide a sufficient area on which to easily handle and store wood is not uncommonly resulting in extra labor and equipment costs which more than balance the apparent saving on restricted land use. Space for stacking each of the kinds of forest products received in mixed loadings should be provided along the same track and as closely together as practicable to minimize movement. Forest products which must be handled with the same kind of mechanical equipment should be kept in the same section of the yard.

## Report on Supply Train Operation

The subject of supply train operation and line delivery of material is one which has come in for considerable attention in recent years. Although supply train operation has long since passed the experimental stage, it still remains an important subject. The Committee on Subject 8 has presented a report this year in which it includes actual figures on the 1923 operations. The report was



C. C. Kyle  
Chairman

accompanied by a motion picture showing supply train operation on the Northern Pacific. It is interesting to observe that the average cost of operation per mile in 1923 for seven roads was \$1.51, while the average cost of delivering per \$1,000 material was \$61, or 6.1 per cent, and that for delivery of new and pick up of old per \$1,000 of material was \$49.88, or approximately 5 per cent.

Being of the opinion that the service of the supply train has long since passed the stage of experiment, the committee felt that a report setting forth some actual figures showing what was accomplished in the 1923 operation and the cost of the same would be of value to the members of this Association. It, therefore, prepared a questionnaire, which is embodied by sections in this report, and addressed it to 46 of the larger roads. In this report a summary of replies to each question is given, together with the average miles run, days operated, cost, etc., of the operation of seven roads, these being the only ones operating supply trains who were able to furnish a complete record of their operation.

Q-1.—Do you operate independent supply trains?

(An independent supply train is a train operated exclusively for distributing material and picking up surplus material and scrap.)

A.—Of the 36 roads from which answers were received, 12 operate supply trains.

Q-2.—How many outfits do you use in your supply train service?

A.—Thirty outfits are in service on the 12 roads or an average of two and one-half trains or outfits per road.

Q-3.—What year was practice started?

A.—Supply trains were operated on one road as early as 1889—

eight roads installed trains between 1903 and 1918 inclusive, and three started the practice subsequent to 1918.

Q-4.—What officers are supposed to accompany train?

A.—Usually trains are accompanied by storekeeper, division superintendent, trainmaster, roadmaster, supervisors regularly—occasionally by general storekeeper, traveling storekeeper, general superintendent and mechanical department representative.

It was the opinion of the committee that supply trains should be accompanied by division superintendent, division engineer, trainmaster, signal supervisor, B. & B. supervisor, roadmaster and division storekeeper, also whenever possible by mechanical and other department representatives.

Q-5.—At what intervals are trains operated?

A.—Nine roads operate over main line every 30 days and three every 60 days.

The committee believed that a 30-day schedule is the most efficient and obtains the maximum service for the following reasons:

First: it reduces investment in line stock to a minimum and this on a large road amounts to considerable.

Second: it reduces investment in scrap and serviceable material, by picking up and moving into reclamation plants and scrap docks and having it ready for quick sale or re-distribution.

*Third:* it permits more frequent inspection of material, tools and equipment by division officers.

Q-6.—Is the service the same on branches as on main line?

A.—Eight roads give the same service on important branch lines as main line. One road does not operate on branches. Three roads give 30-day service on main line and 60-day service on branches.

The Committee felt that on important branches, service should be the same as on main line and on small or unimportant branches, train should probably be used only for general clean-up about twice each year.

Q-7.—Does supply train make deliveries to all points in congested terminals? If not, what method is employed?

A.—Eight roads report delivering material to all points in congested territory. Three deliver at convenient central locations. One delivers some items by supply train, balance by motor truck. Replies indicate that supply trains are being successfully operated in congested terminals on eastern, central, western and northwestern railroads.

The committee recommended further study and investigation of the use of motor trucks in conjunction with supply train service in congested terminals.

Q-8.—Is inspection of station buildings, section tool houses, sectionmen's living quarters, etc., made by officers accompanying supply train?

A.—Ten replies shown inspection of all buildings. One tool houses only. The committee believed that all station buildings and structures occupied by section forces, signal maintainers, pumpers, etc., etc., including grounds should be regularly inspected by officers accompanying supply train.

Q-9.—If not, what method of inspection is employed?

A.—Many roads did not answer this question but general practice of those answering is to the effect that periodical inspection is made by the superintendent and staff.

Q-10.—Are tools and equipment in section tool houses inspected as to condition and amount on each trip of supply train?

A.—Eleven roads report inspection of tools and equipment in section tool houses.

The Committee was of the opinion that tools should be inspected at stated intervals, both as to condition and quantity. This inspection to be made at least four times each year.

Q-11.—Where material is requisitioned for a definite job, is it accumulated and held at store and shipped complete in one shipment approximately at time work is to be performed?

A.—Fifteen roads follow this plan as far as possible. Nine do not, and balance, or 12, did not answer.

The committee felt that this subject is rather foreign to supply train operation and is of such importance that it should be made a subject of special study and report by a committee appointed for that purpose.

Q-12.—If so, is the supply train used for delivering such material?

A.—Six roads operating supply trains use the train for this purpose whenever possible. Four do not use train.

The Committee was of the opinion that material of this character in less than car lots should be delivered by supply train whenever possible.

Q-13.—Of what equipment is supply trains made up?

A.—Replies from railroads operating supply trains indicate some variation in equipment used. However, the variations are probably brought about by peculiar condition on different lines and in a general way the make-up on all roads is about as follows:

One living car equipped with sleeping and eating accommodations from 8 to 12 men.

One or more cars equipped for carrying oil and general supplies, all tanks equipped with measuring pumps.

One or more cars equipped with racks and shelving for tools and miscellaneous equipment.

One or more cars equipped with bins and racks for signal supplies.

One or more tank cars for handling gasoline and kerosene.

One or more flat cars for loading scrap.

Several suitable flat and box cars for delivering and picking up switch ties, rail, lumber, frogs, switches, cattle guards, and other heavy items.

In addition to the above equipment, some roads also carry a locomotive magnet crane for loading scrap and loading and unloading rail frogs, etc.

Q-14.—Is supply train outfit at any time operated in local trains?

A.—Replies indicate that supply trains are usually operated as special but occasionally during the winter months on some roads they are operated in local trains. On others they are at times operated in local trains over branches and short divisions. It was the opinion of the committee that the best results are obtained by operating supply trains as special trains. Local trains are usually burdened with all the work they can handle, and,

except on very short divisions, frequently run into overtime and if the supply train equipment is added, it is a foregone conclusion the result would be overtime and also considerable neglect to both local and supply train service, the most neglect falling on supply train operation.

Q-15.—What work train service does the supply train perform?

A.—Replies from most of the roads indicate that little, if any, actual work train service is performed by the supply train. However, as at least three roads at times are doing such work train service as picking up and delivering rail, distributing cross ties, switch ties, ballast, tie plates, angle bars, etc.

The committee believed that some roads are not obtaining all of the benefits from their trains that they should and that the regular running of supply trains eliminates the necessity, to some extent, of operating periodical work trains.

Q-16.—Do you furnish free beds and meals to all men on supply train when away from home stations?

A.—Ten roads furnish free beds and meals to all men on supply train, one furnishes beds only and one does not furnish either. The committee felt that too much importance cannot be placed on this feature of supply train operation—good meals and good beds surely have a tendency to keep the efficiency of employees on train up to a high point.

Q-17.—Is there any opposition to the supply train service, and if so, from what source?

A.—Replies indicate there is no opposition on roads upon which trains are now being operated.

Q-18.—Who makes the itinerary?

A.—On some roads the itinerary is made up by the general storekeeper, but in most cases it is made up by storekeeper and superintendent or his representative, approved by general superintendent and general storekeeper.

Q-19.—How is the stock of material to be handled on to supply train before trip commences, arrived at?

A.—From summary of requisitions, to which is added a reasonable percentage of standard material to take care of any unexpected requirements arrived at after the requisition was originated.

Q-20.—Do you make monthly record of operations?

A.—Of the 12 roads operating supply trains, seven keep monthly records of operation and five do not.

Records covering supply train operation are certainly of importance to the store department and other officials and the committee recommended that complete records should be kept by months showing days and miles run, total cost in detail, total value of material disbursed, also total value of material picked up, from which average cost per mile and average cost per \$1,000.00 disbursed and picked up can be arrived at.

Q-21.—If supply trains are not operated, do you deliver material by supply cars operated on local trains?

A.—The 36 replies to the questionnaire indicates that 19 roads operate supply cars, and of the 19 operating supply cars, four operate only over part of their line. Reports indicate that roads operating supply cars are obtaining fair service in connection with delivery of small supplies, tools, etc. However, definite or accurate cost of operation are not obtainable and comparison with expense of operating supply trains cannot be made.

The committee was of the opinion that full and accurate records should be kept covering cost of operating supply cars, this cost to include a portion of expense of local train in which cars are operated and overtime paid section, station, or other employees meeting train.

Q-22.—If supply trains or supply cars are not operated, how is supervision to outside material given by the storekeepers?

A.—Several roads did not answer this question, others stated that periodical, (in some cases monthly), trips are made by the division storekeepers, supervisors, roadmasters and others. From replies received to this question, it was quite evident that many roads are not giving proper attention to inspection of line material, buildings and other property. This invariably means an over-stock of material, improper tools and bad conditions around buildings and grounds. Probably the principal causes of lax inspection are lack of facilities and a fixed schedule. A modern supply train operating on a definite schedule is the answer.

Q-23.—If supply trains or supply cars are not operated, what method is employed in delivering material?

A.—To this question there is, of course, but one answer; namely, by local freight and passenger trains.

Q-24.—If supply trains are operated, do they deliver material to local storekeepers and small roundhouses and car repair points?

A.—Replies indicate that all roads operating supply trains deliver considerable material to local stores and small roundhouses and car repair points.

Q-25.—How many store department employees and how many employees of other departments are employed on each train, other than engineman, trainmen and officers?



A.—There is some variation in number and class of employees carried on supply trains on the different roads. However, the assignment usually consists of one supply train storekeeper and from one to four assistants or helpers and whatever section laborers may be necessary to handle the work in a quick and efficient manner. On one of the eastern roads all the labor necessary for delivering and picking up material is carried as a regular crew. These men are all store department employees and are paid a monthly salary, with no allowance for overtime. This arrangement is particularly adaptable to the road referred to due to the fact that only one outfit is operated, and this in continuous service, each working day in the month, also to the fact that stations and points to be served are frequently only a mile or two apart.

Q-26.—Can you furnish, if requested after December 31, statement showing following information for year 1923?

A.—As stated earlier in this report, only seven of the 12 railroads operating supply trains are able to furnish complete records of the 1923 operation, and the figures given below cover these roads.

(a) Total number days trains operated in 1923.....	1,836
(b) Total miles worked in 1923.....	153,039
(1) Train and enginemen's and other expense.....	\$ 93,407.19
(2) Fuel .....	\$ 36,499.50
(3) Wages supply train employees other than engine-men, trainmen and officers.....	\$ 70,235.51
(4) Food, cooks and waiters.....	\$ 31,083.54
(5) Total .....	\$231,225.74

Q-27.—Average cost of operation per mile 1923....\$ 1.51

Q-28.—Value scrap, tools, new and second-hand material picked up in 1923.....\$ 845,060.68

Q-29.—Value new material delivered 1923.....\$3,790,487.19

Q-30.—Average cost of delivering per \$1,000 material \$61.00 or 6.1 per cent.

Q-31.—Average cost of delivering new and picking up old material .....

\$49.88 or 3 per cent.

Q-32.—What are the principal items of material not handled by supply trains?

A.—Replies indicate that there is not much in the line of maintenance of way, signal and station material that is not handled on supply trains. Two or three roads do not attempt to handle rail, ties, heavy bridge timbers and similar material, but the others use the supply train for this class of material as far as possible. Mechanical department material is not usually delivered by supply train, although some items are handled by this method to outlying roundhouses and repair points.

Q-33.—Do you deliver stationery by supply trains?

A.—Four roads use supply train as medium for delivering stationery regularly and two others use it occasionally.

The committee felt that delivery of stationery by supply train is a question that must be decided by each railroad, after taking into consideration the geographical location of their line with respect to stationery storehouse or terminal from which supply trains operate. It was believed that delivery of stationery by supply train can be economically handled if stationery store is centrally located and all supply trains operate out of that central point. The practice is not recommended on roads where stationery store is located at terminal on one end of line and one or more trains are operated out of distant terminals, as this would mean additional stationery stock and a much larger investment.

### Conclusions

The committee was unanimous in its opinion that the supply train operated as a special train on a definite schedule is the most effective and economical method of delivering material to users on the line:

It provides a definite basis for ordering and delivering material in proper quantities for immediate operating requirements.

It provides for systematic collection of scrap and surplus material, thereby reducing investment in line stock to a minimum.

It provides a means of inspection for division and other officers and thereby assures a clean railroad, and cleanliness means economy.

It assures the absolute need of any article delivered by actual investigation by proper officers on the ground.

It eliminates the cost of wrapping, packing, tagging and marking material for local freight shipments and avoids handling the same through congested freight houses and terminals.

It eliminates extra switching and overtime and makes a large saving in car days by maximum loading and quick delivery.

Committee: C. C. Kyle (N. P.), chairman; V. N. Dawson (B. & O.), J. W. Gerber (Sou.), H. C. Magill (N. Y., N. H. & H.), W. S. Morehead (I. C.), E. H. Polk (S. P.), W. C. Shaw (A. T. & S. F.), R. J. Elliott (N. P.), chairman *ex-officio*.

### Discussion

O. Nelson (C. P.): The committee recommends that tools should be inspected at stated intervals, the inspection to be made four times each year. Why limit it to four times each year? Why not inspect tools every trip?

C. C. Kyle (N. P.) Chairman: For the reason, that it requires very accurate work, on our line at least and I presume on most of the lines, to give the service and to get over the desired territory within the 16-hr. law limit. We feel that four times a year is quite sufficient for the inspection as to the condition of the tools and as to the quantity.

Mr. Nelson: The reason I raised the question is because I can see there is a difference of handling and storing tools at the section toolhouses. On the Union Pacific we have a standard that we insist upon being lived up to. The arrangement in the section toolhouses are uniform. Tools are all visible the minute you enter the toolhouse and an inspection can be made in a very brief space of time.

Chairman Kyle: That is our practice. However, you can't inspect the tools properly if you attempt to inspect them in the toolhouse, for the reason that you may have six tools of one kind; necessarily, five of those would have to be in the rear. So we follow the practice of having the foreman lay the tools out on the ground in front of the section toolhouse, so without very much time and without much mulling over them, the road foreman and others interested can see instantly the condition of that tool.

Mr. G. E. Tallmadge (G. N.): I would like to ask Mr. Kyle if his experience indicates the benefits of a steam locomotive crane? If it warrants the initial cost of installation, and the cost of operation?

Chairman Mr. Kyle: The locomotive cranes on our road having magnetic lifts were not purchased for the exclusive purposes of supply trains. Every well equipped division, has a locomotive crane in their bridge work, in their wrecking, in many other duties than the supply train. These cranes, are employed constantly in our work.

J. E. Perry (S. P.): We have been operating supply trains for the last 10 years, and we have tried every means under the sun to deliver the material economically. We have used several kinds of cranes. We have a portable crane handled by air attached to the train line. We find the amount of material and the class of material we are delivering warrants something of a more substantial nature than the air crane. We are now considering the purchase of a locomotive crane with magnetic attachment. It will eliminate section men at our toolhouses for by having that crane it won't be necessary to have section men unloading scrap and unload the heavy material from the train. We feel the expense of a locomotive crane of about 5-ton capacity will answer our purpose. We are planning buying one and if it answers our purpose, if it is successful, we are going to have a crane for each of our divisions.

L. T. Hoffman (U. P.): I would like to ask Mr. Kyle to what extent his supply train makes specific deliveries to specific terminals as for instance, in congested terminals like St. Paul?

Chairman Mr. Kyle: We deliver all of the material, of the class we have on the supply train, to the St. Paul and Minneapolis terminals. We do not employ the use of trucks. In some cases where time might be saved by depositing a certain man's material at this point, along with another probably at the same stop, that is done, thus avoiding a long switch.

*The report of the committee was accepted by the Division.*

# Disposition of Unclaimed Freight

By R. T. Stevens  
Freight Sales Agent, Baltimore & Ohio



R. T. Stevens

Much progress has been made in recent years in the disposition of over, refused and unclaimed freight which has thus decreased the money losses in claims paid out annually by the railroads. One of the weaknesses of present methods is that it is usually taken for granted that refused or damaged freight has lost its commercial value by reason of this condition and therefore insufficient attention is paid to its further

protection or to its restoration prior to sale. Mr. Stevens in his paper has demonstrated that this is a mistaken view and that many shipments can be reconditioned and sold at prices at or about those of a perfect shipment. The paper describes in an interesting and detailed form the practices of the Baltimore & Ohio for the handling of such freight.

The question as to the methods employed in the disposition of over, refused and unclaimed freight and baggage by transportation companies is, generally speaking, one that has not been given the consideration to which it is entitled. Claims paid annually on such items reduce the net earnings considerably, and, consequently, every effort should be made to realize the greatest possible amount from the sale thereof.

It is invariably taken, as a matter of course, that, when freight or baggage is refused, damaged or unclaimed, it loses its commercial value and, by a great many agents and their assistants, it is treated as such, proper care not being exercised to avoid further damage and deterioration. While loath to criticize, I feel that a few remarks regarding the handling before the freight reaches the point of sale are appropriate.

From personal observation, I have noted many instances where apparently little or no attention had been paid to shipments presumably on the assumption that they had lost their commercial value, but such was not the case, for it developed that, with proper care in handling and by reconditioning, the shipment was restored to very near its original value, and was sold at about the same price which an article in perfect condition would command.

The railroad system, on which it is my pleasure to be employed, has inaugurated the practice of disposing of over, refused and unclaimed freight and baggage, perishables excluded, through the medium of a freight sales agency in charge of a freight sales agent, who is on the staff of the purchasing agent.

## Conditions Affecting Location of Agent

The agency was located in Baltimore, Md., only after mature consideration, the deciding factors being:

- (a) It was felt that, generally speaking, a better market prevailed for the miscellaneous items which would be offered for sale.
- (b) Suitable warehouse facilities were available.
- (c) The close proximity of the company's general offices.

The results obtained have satisfied us the present location of the agency is the most logical point. It is the policy, however, to make sales at other points on our road, when it is felt that such towns afford an equal or a better market, and sales have been made at New York, Philadelphia, Pittsburgh, etc. The advisability of holding sales at other than the established headquarters is left to the discretion of the freight sales agent, who is largely governed by the quantity and value of the freight to be sold and the market conditions prevailing at the point where the freight locates.

The freight sales agent, being a member of the purchasing department, is in a position to keep informed of the market conditions, and, consequently, can accurately determine the advisability of accepting or rejecting the offers made for the freight which has been turned over to the agency. It is customary, when inviting bids, to reserve the right to reject any, or all, bids.

As I believe few other railroads assign this work to the purchasing department, it might be appropriate to here state that it is the policy of my company to charge the purchasing agent with the responsibility of purchasing and selling all materials, supplies and equipment, consequently, the articles coming within the scope of the subject matter of this paper are so disposed of.

While the freight sales agent is on the staff of the purchasing

agent, all of his accounts are audited semi-annually by the company's auditors who are responsible to the comptroller, and, further, an inventory is taken annually under the supervision of the accounting department officers.

## Other Methods First Given a Trial

The system now in effect was not introduced until after a thorough trial of the other methods which are more generally followed such as:

- (a) Sale at point of origin by local railroad representative.
- (b) Sale on a commission basis by an authorized agent.
- (c) Sale by public auction conducted by a licensed auctioneer.

It is felt that some of the many advantages of the present system over the other methods are:

- (a) Better care in handling and accounting for all over, refused and unclaimed freight and baggage.
- (b) Greater value received due to being able to obtain higher prices by sale direct to individuals and the companies the particular line of merchandise in which they are interested instead of to speculators who try to buy at ridiculously low prices for resale to the ultimate consumers.
- (c) More efficient handling and reconditioning which prevent further damage and to make the shipment more saleable.

Agents at the various stations are instructed by the general freight claim agent to place all shipments in proper forwarding condition, and, after every reasonable effort has been exhausted to either: (a) Locate the consignee; (b) get disposition from the shipper in case of unclaimed freight; or (c) have reasonable allowance made for damaged freight; and then to forward same to the freight sales agency, showing all information he may have available, such as claim reference, if any, on freight bills, etc. When received by the freight sales agent, each individual item is given a sales number with prefix designating whether over or refused, the latter to enable one at a glance to determine whether same checked over without proper marks or was refused for some cause. The record referred to is kept in a looseleaf book, it being prepared in duplicate form, and gives a general description of the commodity and its condition, as far as possible, together with way-bill reference, forwarding station, etc. One copy of this record is sent to the general freight claim agent for his information and files and from same he is quite often enabled to reconcile certain shipments with claims presented and in this way have the shipment returned to the proper owner (approximately 20% of all over freight) and the claim cancelled.

## Sales Warehouse Divided Into Sections

The freight sales warehouse is divided into sections as follows:

**Grocery Section.** Contains canned goods, flour, sugar, groceries, stock feed, etc.

**Merchandise Section.** For dry goods, wearing apparel, china, glassware, hardware, etc.

**Furniture Section.** For furniture of all kinds, floor coverings, stoves, etc.

**Building Section.** This includes all kinds of building material, cement, etc.



**Miscellaneous Section.** For machinery of all kinds, farming implements, oils, greases, etc.

**Hold Section.** For all shipments on which there may be a possibility of locating the owner.

With regard to household goods, it is the usual practice to place all such shipments in the latter section until all possibilities of locating the shipper have vanished, as such articles are more often improperly marked and heavy claims are usually filed, as their value is invariably far greater to the original owner than is their commercial value and they are more often returned than is the average shipment, as, when unpacked, there is usually some means of identification located.

It is the practice not to hold the freight any longer than necessary, although it has been found desirable to hold sales of seasonable goods at times when best prices may be obtained. As soon as possible after shipments are received they are unpacked, assorted and placed in a presentable condition, being arranged on shelves, tables or in bins so that they may be advantageously inspected by prospective purchasers. A card index is kept of the names and addresses of persons and firms interested in the purchase of the various commodities, and when freight is about to be offered for sale an invitation to bid is prepared describing the commodity and showing the closing date and hour up to which offers will be received, and this is sent to those interested, inviting their inspection and best offer. When all bids are received they are tabulated and the award is made to the highest bidder. All bids are considered strictly confidential and the name of the successful bidder and the price paid is never announced publicly. By this method of handling the possibility of forming pools and buying at ridiculously low prices, as is very often done at public auction sales, is eliminated, or, at least, reduced to a minimum.

As a rule all perishable freight, such as produce, meat, etc., is sold by the local agent, as due to the nature of the freight, immediate disposition is necessary. Such items which accumulate in the Baltimore district are, of course, sold through the medium of the freight sales agency. No material that could be taken for company's use is offered for sale until after it is inspected by a representative from the stores department or the using department and there is quite a saving to the railroad along this line.

### Method Produces Gratifying Results

Since the introduction of the present method of disposing of our freight and baggage, it has been definitely demonstrated in numerous cases that the results obtained were more satisfactory, and the following are cited as examples:

(a) Prior to three years ago, the accumulation of unclaimed baggage was sold by a licensed auctioneer, but since that time, through the freight sales agency. The result has been a greater return on the baggage sold at about 50 per cent of the cost for selling.

(b) On a certain district freight was being sold for our account by an auctioneer, and a consignment of leaf tobacco was turned over to him. His best offer was 3 cents per lb., and he was requested to refuse same, the shipment being turned over to the freight sales agency, where 12 cents per lb. was realized.

(c) Instances are not uncommon where it is possible to dispose of the freight at prices in excess of the claim. It is recalled of one case where a shipment of cotton yarn was refused on account of a slight damage, and, when sold on competitive bids, approximately 50 per cent more than the claim value was realized.

The above are merely cited as examples of some of the gratifying results which have been obtained since the introduction of our present system. In closing, an invitation is extended to any member interested to visit our freight sales agency at Baltimore, Md., in the event further details are desired.

### Discussion

F. H. Fechtig (A. C. L.): There has been no department in the railroad that has done so much in the last few years as the lost and found department to reduce their claims. From 3 to 4 per cent. a year of the gross earning that were used in 1920 and 1921 for claims, it has been reduced to less than 1 per cent.

B. T. Adams (I. C.): In disposing of refused freight we go further than this paper in that we prevent the accumulation of such things as household goods and things of that kind by sending them to the division storehouse and putting them in shape for delivery. We have had quite a bit of success in repairing sewing machines where the legs were missing, by going to dealers in secondhand sewing machines and fixing on legs, etc.; we do the same with chairs and various other articles which can be re-

conditioned and sent back to the agent from whom they were refused, and he effects delivery in about 80 per cent. of the cases, thereby preventing claims.

C. B. Tobey (L. V.): We keep in touch with our people and have advance notice of all sales, and look over all the material before any sales are made. We frequently find a lot of material that we can use just as well as the other material that we buy on specifications; we take that and the freight claim department is given full credit, which they probably wouldn't get otherwise. It means a lot of money saved for the company.

Mr. J. G. Stuart (C. B. & Q.): Our over freight is assembled at two points, Chicago and Omaha. Storekeepers are located at both points or very near, and we not only make inspection before it is sold, but our storekeepers are constantly going through the over freight room and in that way picking up a great deal of material that otherwise might be sold.

J. L. Quarles (C. & O.): We look over all the freight on the C. & O. Who sets the price on the material taken over by the stores department?

Mr. Stevens: That price is usually set by the purchasing department, the purchasing agent's office, and it is usually around the market price, providing the commodity is in perfect condition. The freight claim department is given credit at the market price, or the price the purchasing department would have to pay for similar material.

W. Davidson (I. C.): The Illinois Central has one or two depots where we assemble all the unclaimed freight before it is offered for auction by the freight claim agent. The storekeeper is called to bid on the same, just as though he were going to buy. We give him a bid and he uses the bid in disposing of it. After he sells 15 or 20 items out of 50, we get the rest and use it.

O. Nelson (U. P.): On the Union Pacific, we handled it pretty much as described in the paper. We are notified from time to time of the accumulations and have an opportunity to present bids together with the outside trade, and we oftentimes acquire very cheap material that way. We had a case sometime ago where a car load of pickle kegs had been refused. It happened to be that there was no market for the damaged kegs to speak of. There had been a fire; only a small part of them really were damaged. We took them over and converted them into water kegs. We haven't bought any water kegs since. We have enough to get through the season.

Mr. E. H. Reed (Southern): I happened to be the storekeeper caught with the desk. (Laughter) That was at Birmingham. Mr. Laughton caught me with it.

However, we did derive a great deal of benefit on a great many items, when we were short. In addition to taking over items of pipe, bar iron, wheelbarrows, brooms, etc., we got a nominal price. We made a great deal more than had we sold them at auction.

The Chairman: There is a principle involved. This paper brings out one organization to handle it. Other roads handle it through an auctioneer; some through the purchasing department; some through the freight claims. Let us hear from you as to how you are handling it and the success you are having.

L. Lavoie (C. N. R.): We handle it through the freight claim department.

A. A. Goodchild (C. P. R.): On the Canadian Pacific we have handled it rather indirectly; the freight department have advised us what they have available or what they have left on their hands and requesting us to inspect and suggest a price. The method outlined in the paper is an excellent one to bring this material under the hands of the general purchasing agent.

W. S. Morehead (Illinois Central): I would like to add

a little to what Mr. Stuart had to say about accident claims for his trucks. If you want shop mules, get in touch with your freight agents. These Fords that are hit along the road make good mules.

Mr. Goodchild: Do you get a requisition or not. What is the custom in that respect? I wouldn't like our storekeepers to stock themselves up.

Mr. Stevens: It is handled by requisition through the general storekeeper. They can't take the material in a promiscuous way. They have to have a requisition.

W. F. Jones (N. Y. C.): On the New York Central, this question is handled by the freight claim department. If it is material that can be used by the railroad company it is reported to the general storekeeper. Lists that the store department can use have been submitted previously to the freight claim department although many times there are materials reported over to the freight claim agent and sent to a central storehouse that are not reported by the general storekeeper. Before railroad material used by railroads is moved from the point where the materials check or where they are refused, the general storekeeper directs that the division storekeeper, traveling storekeeper, master mechanic, division engineer

or road supervisor visit that particular point in the routine of his duties, getting probably a better description of the material than was reported by the agent, and reports to the general storekeeper that he can or can not use that material, or if it could be used on some other division. Orders are immediately given to ship it to the nearest division storehouse or the nearest place where it can be used. This obviates the necessity of double handling by sending it to the general storehouse of the freight claim department, located at Syracuse, N. Y. In that way we get what we want and we are not burdened with material that can not be used by the store department in many of the departments they serve. Any material that may be overlooked by the freight claim department that can be used by the railroad company is sent to the storehouse at Syracuse where such material is periodically examined by representatives of the store department. We have been very successful in getting high prices for our material although we were up against the proposition one time as suggested in the paper, of men forming combinations, or pools, and keeping the prices down, but by the obliteration of those pools, we are getting as near a 100 per cent. on the dollar as can be expected.

## Report on Stores Delivery of Material

The practice of making deliveries of materials by the stores department employees is as yet somewhat of a new idea to many railroads. The adoption of this method offers many advantages to all the departments affected and often results in substantial economies in the cost of handling the material. These possibilities make the work of the Committee on Subject 15 particularly import-



G. A. Secor  
Chairman

ant and its findings of value. The report of the committee this year was featured by a moving picture showing the method in use on the Southern Pacific. It also gives the results of a questionnaire on the practices of some 38 railroads. From these replies the committee made a comparison of the actual cost of delivering material on 15 roads. It also submitted a list of recommended practices.

A questionnaire was submitted to 61 railroads. Replies were received from 38 indicating that 22 operate stores delivery system; four do so partially, while 12 do not. Six railroads have installed the stores delivery system during the last year. The committee felt that it was not necessary to go into detail, on replies, received to the entire questionnaire, but as a matter of information, desires to bring before you, replies received to some of these inquiries, which are of special interest as follows:

Question No. 4. How many messengers required per 1,000 men employed in car or locomotive shops, or both?

Replies from fifteen railroads indicated an average of six material messengers per 1,000 men employed.

Question No. 5. How many material requisitions filled per day per 1,000 men employed in shops?

Twenty-three railroads replied, showing an average of 541 material requisitions filled daily per 1,000 men.

Question No. 6. Do store messengers deliver material direct to machines or locomotives, in the shops, or is the material delivered to some one designated place?

Replies from 22 railroads indicated that it is the practice, on four lines, to deliver material to designated places, while on the remaining 18, material is delivered, direct to using point.

Question No. 7. What is your practice of making requisitions, and getting them to the storehouse?

Replies from 22 railroads show three different practices in effect. On 16 lines, material orders are placed in requisition boxes, located

throughout the shops, and picked up by store messengers. On three lines, orders are sent to the storehouse by mechanical department messengers. On three lines, orders are phoned to the storehouse direct, by shop foremen.

Question No. 9. Is delivery made on scheduled time?

It was indicated, by the replies, that on 22 railroads, 14 have a scheduled delivery, while eight have not.

Question No. 10. Do messengers wear red caps, or other emblem to indicate their employment?

Seventeen out of 22 railroads state that no special emblem is used, while on five railroads red caps or badges are in use.

Question No. 14. Is payroll, and other expenses of these forces, charged to stores expense or to mechanical accounts?

Thirteen railroads replied, stating that delivery expense was charged to mechanical department, while 11 railroads assume this cost in stores expense.

Question No. 18. When mechanics and helpers secure material, what is average number of minutes required, from time they leave their machine or work, to secure material, from the storehouse, until they return to their work, where delivery system is not in use?

Fifteen railroads replying to this question, show that an average of 16 minutes' time per trip is consumed by mechanics or helpers in securing their own material.

Question No. 19. What in your opinion is the best system of furnishing material to users in shops?



The general opinion indicates that the stores department delivery system to users at shops is by far the most popular. Out of 34 railroads indicating their preference, 30 favored stores delivery system, two mechanical department delivery system, while two preferred the men calling for their own material at the storehouse.

### Savings Now Being Realized

From the foregoing replies the committee has made comparison, as to actual cost of delivering material, by the stores department to users at shops on 15 railroads, with the method of having mechanics or their helpers call for this material at the storehouse with the following results:

Average number of orders filled daily at shops per 1,000 men.....541  
Messenger service per day supplying 1,000 men (6 messengers)....48 hours  
Average time consumed by mechanics or helpers securing material, per trip to storehouse.....16 minutes  
541 trips of 16 minutes each.....144 hours  
Time saved per day per 1,000 men employed.....96 hours

This saving is made possible by the assembly of materials, ordered on several requisitions, at the storehouse and effecting delivery by one messenger trip from storehouse to the shops on

## NORTH AND SOUTH RAILROAD

### STORE DELIVERY SYSTEM

Statement Showing Costs and Amount of Work Performed in Delivery of Material to Shops and Car Repair Yards

Month of \_\_\_\_\_

Store	Average No. of employees engaged in this service	Cost of Deliveries Stores to Shops	Number of Deliveries Stores to Shops	Average cost per Delivery
Store District No. 1				
Store District No. 2				
Store District No. 3				
Store District No. 4				
Total				
Total Year				

Fig. 1.—Form for Showing Costs

regular schedule. The saving is also dependent upon local conditions, principally distances between storehouse and various shops, and condition of roadways. It is understood, by saving is meant that decrease can be made in mechanical department payroll, or that an equal amount can be realized in mechanical productive labor. A further saving is also made in the return movement of manufactured material from the shops to the storehouse, as material messengers, or delivery trucks can pick up this material and return it to the stores department, thereby preventing an empty return movement.

Stores department delivery of material on several railroads, where shop operations are contracted or worked on piece work schedule, is reported as being essential. Fulllest co-operation must exist between the stores and consuming departments to obtain the greatest efficiency. Consuming departments should anticipate their requirements as closely as possible to conform with scheduled deliveries.

On one or more railroads, on which stores delivery has been in operation for a number of years the stores department has assumed the handling of material between shops designating same as inter-shop delivery. This inter-shop delivery consists of transferring locomotive and car parts from one shop to another, as well as the transfer of such material as is manufactured on stores order, which is made in one shop and finished in another. Expressions have been received from heads of mechanical and car departments on railroads, where stores delivery system has been in use for a num-

ber of years, and without exception they are all greatly in favor of its continued operation.

### Benefits to the Stores Department

The committee found the following benefits reported on railroads where the delivery system is being operated:

(1) Small shop stocks can practically be eliminated, except where necessary to carry sub-stocks in shop buildings where heavy work is performed, thereby reducing stock investment; in this case delivery can be made from shop stock if quantity used justifies.

(2) Better control of stock is made possible, on account of stores department representatives being in constant touch with the material situation, in and about the shops, also securing prompt return movement of un-applied material.

(3) Material in stock can be carried more neatly and orderly than where stock is accessible to employees other than of the stores department.

(4) Avoids congestion at delivery counter and corresponding delay in time to stores department employees.

(5) Prevents loss of time, wasted through visiting, etc.

(6) Storekeepers will keep their stock properly catalogued, so that delivery will be made without depending on verbal information from the users.

(7) Closer check on material shortage.

(8) Substitution of material can be made more quickly and economically by conference between stores delivery messengers and foremen.

(9) Gives stores department employees wider knowledge of material, and its usage by contact in the shops, laying a good foundation for their future work.

(10) Insures the receipt of orders for all material, thereby greatly reducing the possibility of material moving from stores stock to the user without proper charge being made.

### Benefits to Mechanical Department

(1) Reduction in cost of securing material. This is accomplished by concentrating delivery, as several orders can be filled at one time; also trained men in delivering material, will become much

## NORTH AND SOUTH RAILROAD

### STORES DEPARTMENT

### STORE DELIVERY

\_\_\_\_\_, 19\_\_\_\_  
Box No. \_\_\_\_\_

Your requisition Form No. \_\_\_\_\_, dated \_\_\_\_\_  
calls for the following material, which cannot be furnished at present from stock:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This material is due \_\_\_\_\_

Can substitute \_\_\_\_\_

Storekeeper,  
Per \_\_\_\_\_

Fig. 2.—Material Shortage Report

more efficient and the rates paid are lower than those paid to mechanics or helpers.

(2) Delivery will not be interrupted by bad weather conditions, as is frequently the case where men call for their material.

(3) Eliminates disorganizing effect of having shop men away from their work.

(4) Prevents machinery from standing idle while employees are after material.

### Recommended Practice

The committee recommended the following practices in connection with stores delivery of material to users at large locomotive and car repair shops:

**Installation of System:** The taking over of shop delivery by stores department is a very serious and important matter. The proper method of installing this system is to take one shop at a time and line up the delivery system. Other shops can follow as fast as they can be taken over.

**Organization:** Entire delivery system shall be in charge of one man who shall direct the movement of men and equipment in shop delivery service. The number of order collectors, delivery men and laborers to be dependent upon force required. It is also recommended that all employees in delivery service wear a red cap or badge to designate their employment.

**Equipment:** Tractors, trailers, hand trucks, wheel-barrows, etc., are most generally recommended. Special trucks to handle certain commodities such as drums, wheels, etc., are very economical, but careful study should be made to know that there is sufficient movement of material and that local conditions warrant expenditures for these especially constructed type of trucks or trailers. In a great many cases overhead or locomotive cranes are used to load up trailers with heavy material.

**Method of Collecting Orders:** It is recommended that order deposit boxes be located throughout the shop plant into which foremen shall place their material orders. The order collector shall go around and pick up the orders on regular schedule. He should be a man familiar with material, who is capable of reading over the orders to see that the material orders are properly made out.

When collection boxes are located in out-of-the-way places, an indicator should be displayed by parties dropping orders in the box so that he will not have to visit these boxes, thereby saving a great deal of time. This refers particularly to boxes located on second floors or on balconies. Where telephones are located generally throughout the plant, orders can be telephoned to the storehouse by the shop foremen, where they will be written out, material delivered and foreman's signature secured at time of delivery.

**Schedule:** A definite delivery and pick-up schedule is recommended. It is understood that some shops require more frequent collection of orders, and delivery of material than others. A good working schedule should be devised and should be made to take care of conditions in each particular shop. It is of great benefit to both the stores and using departments to have a dependable schedule, so that foremen and others authorized to make out material orders will know when they should be placed in the box and at what time delivery will be made.

On very heavy items, such as locomotive cylinders, wheel centers, etc., tickets should be made out in advance of actual requirements and time of delivery designated by the foremen. It is the general practice to carry certain stocks at sub-stores, such as bar iron, sheet steel, lumber and paints. When requisition is received for material to be obtained from some sub-store, ticket should be turned over to delivery foreman, who sorts them out into the various routes.

**Roadways:** Delivery roadways, and aisles through shops, should be kept clear at all times to facilitate the prompt movement of material. Due to the modern method of mechanical trucking, hard or concrete roads are recommended. Tractors and trailers can move over these roads with a great deal more efficiency and speed and materially reduce the investment of tractors and trailers, and repair bills of these machines, resulting from poor roads.

**Assigned Stocks:** Where physical or operating conditions require assigned stocks, such as freight working stocks, etc., the delivery of material to this stock shall constitute a stores delivery.

**Costs:** It is recommended that record be maintained showing cost and amount of work performed in delivery of material to shops. Proposed form is shown in Figure No. 1. In working out these costs, all material ordered on one requisition shall constitute a unit of delivery.

**Material Shortage Reports:** In the operation of stores delivery system it is important that the shop foreman be notified when stock is exhausted to avoid delay in his work. For this purpose the original material order, after having been recorded as short in the stores department, should be returned to the foreman personally, properly marked, to indicate that the stores department cannot furnish, or that they are able to substitute certain other material, or form as shown in Figure No. 2 can be used for similar purposes, the original order being retained in stores department for further handling.

### Recommended Practices at Smaller Terminals

At small terminals where the volume of business is too small to warrant organized stores delivery, it is recommended that one material messenger be employed in the mechanical or car department to serve the shops in the same manner as the stores delivery system at larger terminals. It is understood that this delivery system can be followed only where the stores department would not

have sufficient work to employ a messenger about the storehouse at times he was not engaged in actually delivering material, but could be so employed by the car or locomotive department.

Committee: G. A. Secor (C. & A.), chairman; H. R. Duncan (C. B. & Q.), A. J. Munn (G. N.), J. E. Peery (S. P.), E. D. Toye (C. N. R.), W. O. Wallachlager (C. M. & St. P.), W. Davidson (I. C.), chairman *ex-officio*.

### Discussion

D. C. Curtis (C. M. & St. P.): What practice or what procedure is followed in delivering the material to repair tracks?

G. A. Secor (C. & A.) Chairman: We have found two methods in vogue on various railroads, one as shown in the picture; the men deliver the material after the foreman makes a check of the yard the first thing in the morning direct to the cars. Another system is one by which the foreman makes his check in the morning of material required to repair these cars on light repair tracks, and his own men deliver the material or distribute the material to the various cars, after delivery has been made to freight working stock, if such is carried, by the stores department.

Mr. Curtis: We run tractors through our big shops at night, using a second shift. Trailers are set at convenient places through the shop for the accumulation of the borings, turnings, scrap and so forth. The tractor goes in and takes out these trailers and new trailers are put in their place. Also, heavy tires, heavy castings and all material of a large and bulky nature that is very difficult to move through the shops during the regular working hours is moved directly to the machine or to the engine or wherever it is to be used. We have found this to be very economical, and we have found that there is a large saving in time by the use of the tractor and the trailers during a period when the shop is not in operation.

D. H. Reed (Sou.): I would like to ask the committee how, in their experience, they handle material at what they call "light repaid points," such as roundhouse work at the shops?

Chairman Secor: The schedule provides for a more frequent delivery of material to roundhouses. For example, we found on some lines that roundhouse deliveries were effected every 15 or every 20 minutes, while in some bad shops the delivery was not more frequent than hourly intervals.

Mr. Reed: Have you had occasion to have complaints from your mechanical department as to time of deliveries?

Chairman Secor: The schedule should be worked up with the mechanical department, agreeable to both the mechanical and the stores.

E. W. Peterson (Ban. & A.): Under material shortage reports it says, "the material shortage report shall be turned back to the foreman, showing what substitution can be made." Do I understand that substitution is not delivered and would cause a second delivery?

Chairman Secor: The substitution is recommended to the shop foreman and passes his approval before any delivery is made.

J. E. Peery (S. P.): I might answer the gentleman's question by stating that a second delivery is not necessary. The delivery man, in making his rounds collecting tickets or other material, simply passes by and deposits it in the foreman's box, notifying him a substitution can be made. The item is eliminated from the requisition, and if he requires the substitution, he prepares and issues a new record.

C. C. Kyle (N. P.): Upon returning from this convention last year I determined that we would go into stores delivery. One of our large shops where the mechanical department was replaced entirely with new men



had some trouble in getting the materials. Some of the men didn't know the material and none of them knew where to get it. So our store crew volunteered to assist in getting this material to the men. We had had some opposition from our mechanical department at the time to the idea of stores delivery and the entering of this wedge was just what the store department wanted.

We immediately proceeded to put up boxes at the convenient places, with a system of stores delivery in almost a complete form. This of course, made it easy for the other shops. I had two traveling storekeepers take this in hand. There are some strange things about our delivery. We put it in without one additional man in the Store Department. We have put this in, as I say, without any additional cost. We are handling in 15 stores something over 2,000 tickets a day. We have shown that our deliveries are costing about five cents a delivery and a delivery constitutes what was shown on the screen this morning. We are saving \$28,000 to \$30,000 a year in man hours to the mechanical department.

F. C. Newman (Sou.) The report says: "Rates are lower than those paid to mechanics or helpers." I would like to ask the committee what rate they would recommend for store messengers as compared with mechanical helpers.

Chairman Secor: The committee discussed that subject and we decided that store messengers should receive compensation greater than a laborer, and less than a shop mechanic, rather, less than a shop helper, and of course, less than a shop mechanic.

J. G. Stuart (C. B. & Q.): I am going to take excep-

tion to that point. The value of this service in my opinion depends on the man you have for delivering material, and the man you have for delivering material to a very great extent depends upon what you are paying him, for that decides to a great extent how long he is going to stay with you. We have established the principle that a man taking the material around the shop should be paid more than a shop helper. Then there is no chance of his leaving us and going over to become a shop helper. If anyone starts out to pay a small wage to a man who is going to deliver material, he is making a mistake. That man becomes more valuable every day he remains in the storehouse with you. He becomes valuable because he knows where your material is. He becomes valuable because he knows how your material is used over in the shops. He becomes very valuable because he has a fair idea of what substitutions can be made and he can report right back to the man using them.

A. S. McKelligon (S. P.): From that source of supply of labor is where we get our section storekeepers. We start them in when the young men come out of school as store delivery men. It is a training school for them.

Chairman Secor: In answer to Mr. Stuart's statement, the ticket collector should be a man familiar with material, and one who is capable of reading over the orders to see that the material orders are properly made out. That ticket collector should get more than a store helper, or a rate above that of the store laborer, but the delivery boys as a general rule do not receive as much as the mechanical helpers.

*Report was accepted as read.*

## The Duties of a Traveling Storekeeper

By L. T. Hoffman

Traveling Storekeeper, Union Pacific

The traveling storekeeper is the representative of the general storekeeper and, as such, he should be clothed with authority in order that he may settle many troubles on the ground and at once. In his paper on the duties of a traveling storekeeper, Mr. Hoffman brings out this point and places considerable emphasis on it. It is shown that the success of a man in this position necessitates a high degree of intelli-

gence, tact, foresight and training as a basis for the efficient conduct of the work. Following up the fundamentals, the paper discusses the various ways in which the traveling storekeeper may make himself invaluable in correcting losses in storekeeping resulting from inferior facilities, incorrect or inefficient methods, of laxity on the part of employees.

With its multiplicity of duties, "The Store Office" is a large field of attention compelling value, growing by leaps and bounds and as officers find the information, statistics, and facts of wonderful assistance, they are not hesitating to call on the general storekeeper.

The traveling representative must keep up to date; in fact as he travels he is the first to ascertain the true, although changing conditions and requirements. He must needs of necessity be a trouble expert; he locates it, determines cause and responsibility, applies the remedy, satisfies the Big Chief and others, leaving no sore spots. He should have full authority to handle on the ground, at once, and not be tied by instructions. His should not be a policy of watchful waiting.

### Traveling Storekeeper Should Have Authority

The traveling representative should be clothed with authority, he is representing the general storekeeper. He should possess a power of far-reaching and accurate inference, a readiness to foresee results that seem like a special sense or prophetic common sense. He should be well trained in operating and accounting

work, a man who, thoroughly knowing the details, is big enough and broadminded enough to appreciate the value of the right relation of the office to the balance of the work. He is to create and cultivate a friendly spirit of helpfulness, showing his interest in the individual on each job. He is there to help make easier and simpler their work, not to criticise or antagonize. He must be capable by example and teaching to go into the office and, seeing the need of correction, in an appreciative and helpful spirit assist to bring it about. He is to instill in office forces a sincere desire to maintain an efficient standard in all work which will strengthen and enlarge the value of the entire department. He must sell himself.

Office analysis discovers negligence, lack of supervision, poor judgment, mismanagement, quickly revealing expensive spots and bad practices, indicating what to do, developing clearly, just where work and service can be improved or a saving made. Losses through laxity in storekeeping, inferior facilities, incorrect or inefficient methods, are treacherous in their effect. Such losses are hidden in operating accounts. They are there though invisible. They are most easily traced through office methods.

The ultimate success of a plan should be considered, little taken for granted. Profits do not come out of the air, they are a result of knowing and controlling the business and not permitting the business to ride the boss. Managerial ability is largely dependent upon an intimate and first-hand knowledge of the thing to be managed. By such data as the office furnishes is the trend of a business known. Such knowledge is fundamental for the wise determination of the policy to be pursued. Office records are useless unless they exhibit to the officer the facts he must have, when he needs them.

### The Railroad, the Storekeeper and the Public

Inasmuch as public searchlights are directed at the railroads, its executive cannot permit the company's dollars to be wasted for material and supplies, one of its largest expenditures. He wants it intelligently, carefully, economically handled by trained men having complete knowledge of the business and interested first in its success. The hidden dollar for supplies is a relic of the age of ignorance long since past.

The chief clerk and supervisory accountant should be practical stores men; for efficient, successful results they should be trained along material, operating and accounting lines; men who have mastered the details of this or similar work and are successful in imparting their knowledge to others; men of excellent judgment and tact; men of character, capable of forgetting themselves, of broad-minded vision, who can take as well as issue orders, men in whom the rank and file in the office believe and trust. Order and discipline must prevail.

### Master Stock Books

Master stock books maintained in the general storekeeper's office are a valuable asset. By their use continuous savings are possible. All requisitions are checked against them and transfers made from stocks on hand, eliminating unnecessary expenditures. It also affords the opportunity to furnish at once avoiding delay. It insures material on hand being used first, prevents surplus and to a large extent dead stocks, keeping down investment.

### Material Tracer Desk

During heavy business periods everybody wants the same material at once. It is impossible to hold stock expenditures down and not trace vigorously and continuously. The tracer clerk should be a "Live Wire," using tact and good judgment, his memory remarkable and his cleverness to write persuasive appeals for quick shipments, such that firms will take special action in order to accommodate his road. Letters, like bullets, go further when they are smoothest.

The traveling representative's hunches and troubles lead him to the division store office to inquire why this was done and that left undone. There he makes investigations, checks office routine and forces, assignment of work, also work performed and sees that instructions are closely watched and obeyed.

### In the Operating Bureau

In the operating bureau he prevails upon the chief clerk to unload his troubles on operating matters. He finds out by scrutinizing work and asking questions just what the situation is. He checks requisition, material, shop tracer, payroll and personal record desks and other operating work, learning what progress is being made, what can be done to help, where a saving by change of practice or method can be accomplished, and where the fellow on the outside is handling in error, or delaying the big machine. In a kindly encouraging manner, he suggests or instructs, using criticism very rarely, and then only constructive criticism. This personal touch with the office employe produces required results.

He is necessarily familiar with the requirements of all store office work, also instructions from his own and other departments which surround the performance of each job. He is asked every question numerous employes can think of. He knows what effect certain transactions and handling of the work on the outside have on the office. He compares similar work and methods in all offices, endeavoring to bring about simplification, standardization and uniform practices.

This representative, if he is to attain the acme of achievement, must watch all parts of the work through the eyes of the office as well as the field, following up from the beginning, until the close of the transaction and its result is known. He often calls on other division officials including the superintendent, visits their offices and arrives at a definite understanding with them regard-

ing certain instructions and work. To expedite matters he visits the general manager's office, the auditor's and various others from time to time; thus he finally completes problems which originated or landed in the storekeeper's office.

### The Accounting Bureau

Detail, primary and final accounting for receipts and disbursements of all material including distribution to final operating expense accounts just naturally belongs to the stores department. It can be accomplished better and at less cost by them. This is the actual experience on many representative roads. It is a natural branch on the stores department tree, which does not thrive so well nor bear such perfect fruit any other place. There are many good reasons, chief of which is, the stores department is most familiar with the material and its uses. It is held by the Management directly responsible for the receipt, custody and disbursement of all material and supplies. It is most interested in its being correctly and economically handled and accounted for. The general storekeeper must explain inventory differences. He requires first and foremost, the statistical information to control the business to a greater degree of efficiency.

In the Accounting bureau, the chief accountant is with the traveling representative and the work on, and in its important desks is being scrutinized carefully. It may be dealer's bills, or bills collectible. The price desk, where prices should be up to date and correctly computed from purchase bills, freight and inspection charges, or from orders to manufacture material at company shops, when it is so important to know material and labor is correctly charged to the order and only that which should be, is so charged. Perhaps the freight bill desk, some old ones to be matched with correct purchase bills, so letters are written to secure definite information. Maybe the material classification, oil accounts or registers are under fire, and need straightening out. He may have a report from the auditor's investigator, which must be gone over thoroughly and wrong practices corrected.

### Local Storekeeper's Office

This office is more important every day; it is where real battles are won in the company's interest. Each is closely interwoven with the division and the requirements are identical, although in a smaller way. They need watching and training, the success of the work in the division office is dependent to a large extent upon the careful, and correct understanding and operation of the local office.

### The Office Equipment

Proper and sufficient office equipment is a paying investment. The traveling storekeeper watches this, ascertaining if mechanical appliances, particularly in the accounting bureau are understood, taken care of, and full benefit derived therefrom. He learns if additional equipment can be used to advantage and bring about a saving, or if machines may be transferred from one office to another, thereby obtaining greater efficiency and benefit.

We have so much to write about, it is so easy to dictate long letters, perhaps not much in some of them, but to the store man receiving them they look like veritable storm clouds. Some bright genius remarked, "The stenographer and typewriter are a curse to business." Certainly if we had to write by hand, we would use fewer words, letters would be concise, easier understood and complied with. Standard forms on which to handle and compile work in the office are to be used as instructed. Use of forms should not be abused; they are for specific purposes and are worked out to meet requirements of the stores or other departments.

Standard instructions, covering manner in which work in offices is to be performed are compiled for definite purposes and to obtain exact results; they should not be side-tracked, overlooked, forgotten or ignored, or disastrous results will follow. Our traveling representative should be familiar with these forms and instructions, whether they be from the general storekeeper, or other officer. So far as they pertain to stores' work, they are to be honored and followed. The question of adaptability to our work and revision are matters he is to watch, and at all times answer questions relative thereto.

He assures himself that certain statistical information is being received, assembled, and furnished. Statistics covering forces, operation, supply train, reclamation, handling material, storing, inventorying, maintaining stock books, accounting, and cost and return value of investment in an operation of locomotive cranes, magnets, mono-rail equipment, automobile trucks, tractors, and other labor saving devices. These and other records properly kept tell the facts.



## New Officers of the R. S. M. A.

AS NOTED elsewhere, the annual election of the Railway Supply Manufacturers' Association resulted in the unanimous choice of Leroy S. Wright, National Malleable & Steel Castings Company, Chicago, as president, and of W. H. S. Bateman, the Parkesburg Iron Company and Champion Rivet Company, Philadelphia, as vice-president.

In presenting the report of the nominating committee appointed to make the selection of officers for the ensuing term, Frank J. Lanahan, Fort Pitt Malleable Iron Company, chairman, stated that in view of the excellent work accomplished by the members of the Executive Committee it was believed that no better recognition of these services could be made than by advancing the members of this committee next in line, to the vacancies that were to be filled at this meeting. The members of the nominating committee in addition to Mr. Lanahan were: J. G. Platt, Hunt-Spiller Manufacturing Corporation; E. H. Walker, Walker Draft Gear Corporation;



Leroy S. Wright, Newly Elected President  
of the R. S. M. A.

J. R. Blakeslee, Ajax Manufacturing Company; Charles R. Long, Jr., Charles R. Long, Jr., Company; George E. Howard, Commonwealth Steel Company, and Joseph A. Cameron, Moore, Cameron & Hill, Ltd. Approval of the committee's selection was given with enthusiasm.

Leroy S. Wright, president-elect of the R. S. M. A., who according to the by-laws of the association, assumes office in September, at the beginning of the association's fiscal year has represented the National Malleable & Steel Castings Company since the convention of 1906,

with headquarters at the Chicago office. He was originally with the same company at its plant at Sharon, Pa. He has served on various committees at the different conventions he has attended and the satisfactory service he has rendered in those positions led to his election to the Executive Committee, where as vice-president and with no especial duties assigned to him, he has been able to devote his time to rendering valuable assistance to



W. H. S. Bateman, the New Vice-President  
of the R. S. M. A.

others. His advancement to the presidency is a well-earned promotion and his previous history is a guaranty of his future work at the head of this organization.

The election of W. H. S. Bateman, representing the Parkesburg Iron Company and the Champion Rivet Company, to the vice-presidency of the R. S. M. A., is a fitting recognition of the efforts he has put forth for many years to make a success of the particular part of the work which has been assigned to him. He has run the line of committees from sub-committee membership to Executive Committee on various occasions since 1895, when he first appeared at the Old Point Comfort convention as representative of the Lukens Iron & Steel Company. But Bateman's really efficient work and capacity to rise to the emergency came this year. As chairman of the Exhibit Committee it devolved upon him not only to get the exhibits for which space had been assigned into place in good season, but also to provide some place for exhibits for which space was wanted, but for which there was no room on the pier. What "Doc" did under the first head is indicated by the statement that on the Saturday preceding the opening, the exhibits were 70 per cent. in place and on Wednesday, the day of opening, he had a clean slate, 100 per cent. in place. There were about 150 tons of machine tools to place after the pier space was used up. Hence, "Doc" Bateman's pavilion,

as it is familiarly known, just across the Boardwalk from the pier. Locating and getting in operation this amount of heavy machinery—almost over night—is a job in comparison with making two blades of grass grow where one or none grew before, pales into insignificance.

"Doc" Bateman (quotes are superfluous, too, as will be shown further on) appeared in 1895 as representative of the Lukens Iron & Steel Company, which connection he retained until 1907. In 1908 he appeared for the Chicago Pneumatic Tool Company, and in 1909 went with the Parkesburg Iron Company. He has represented this company and the Champion Rivet Company ever since. In 1919 he was elected a member of the Executive Committee for the third (Pennsylvania) district, and as chairman of the Exhibit Committee his work speaks for itself.

Bateman is a graduate of the Philadelphia College of Pharmacy and Science, one of the oldest, if not the oldest school of its kind in the country—103 years. Hence, the "Doc"! But, like the colored preacher who admitted that he was a Baptist, but hadn't worked at it much, he went into iron and steel in 1893. He has made good. He is a member of the Chamber of Commerce of Philadelphia, president of the Logan Improvement League, director of the Drovers' & Merchants' National Bank and Logan Bank & Trust Company, member of the Manufacturers' Club, Old George Road Country Club and Craftsmen's Club, all of Philadelphia, Machinery Club of New York, various Masonic bodies, railway clubs, etc.

Edmonds several of the members spoke on various university activities. R. L. Gordon told of the re-unions held last week. Tell Berna discussed the situation in the major athletic sports and C. D. Young described the celebration on Spring Day. R. H. Blackall gave his impressions of the present situation in Germany based on his observations during a recent visit. Harold F. Welch and R. H. Bourne entertained the party with "stunts." F. W. Mahl, director of purchases, Southern Pacific, was elected president for the coming year and A. F. Stuebing was re-elected secretary.

## Transportation Home

**T**HE PENNSYLVANIA RAILROAD pass clerk will be at the Remington booth to the left of the entrance to the pier at 11:30 a. m. this morning, to readjust any transportation arrangements which may be desirable for those who are entitled to free railroad transportation under the regulations of the Interstate Commerce Commission. Those employees of roads with which the Pennsylvania exchanges passes requesting trip transportation for children must furnish the full name of the child, age and relationship to the railroad employee making the request, in addition to the title, place of residence, and road by which he is employed.

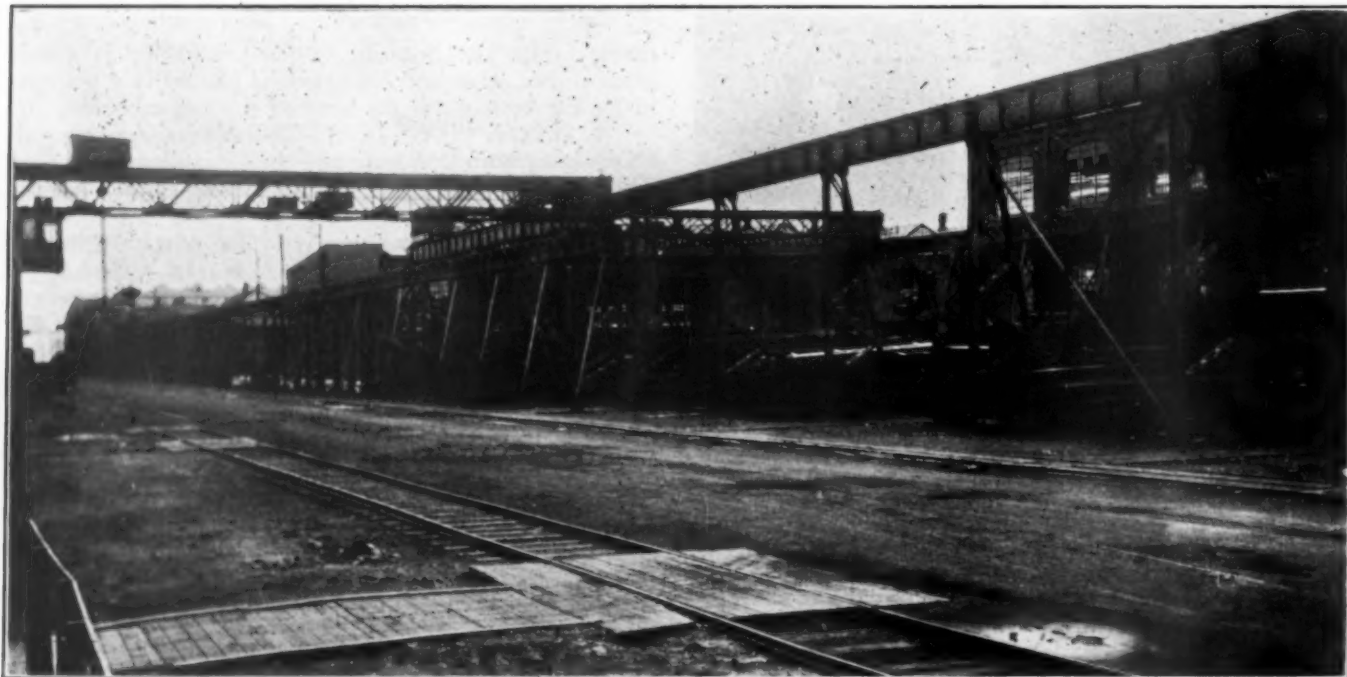
## Cornell Alumni Elect Mahl President

**A**BOUT TWO SCORE enthusiastic Cornellians gathered in the Club Room of the Traymore on Monday evening at the dinner of the Cornell Association of Railroad and Supply Men. At the call of president G. S.

## Lost and Found

**P**EARL READ necklace, about 60 in. long. Return to *Daily Railway Age*, Booth 1.

\* \* \*



Looking Down the Midway at the Angus, Quebec, Shops of the Canadian Pacific



## Transportation Committee Volunteers

THE CHAIRMAN of the Transportation Committee states that he is keenly appreciative of the efforts of the following gentlemen who cheerfully volunteered their services at the last minute and whose names were not recognized in the published lists of the names of the members of the committee: W. H. Sigourney, General Electric Co.; A. C. Andresen, Chicago Pneumatic Tool Co.; L. R. Griffen, National Carbon Co.; Robt. N. Sinkler, Pilot Packing Co.; Chas. L. Heater, American Steel Foundries; K. A. Milar, Milar Clinch & Co.; Wm. S. Noble, Rubberoid Co.; and C. W. Campbell, Chicago Pneumatic Tool Co.

## Registration Figures

AS INDICATED in previous reports of the registration, this year's convention has been a record breaker. Up to 3.30 yesterday afternoon there was a total of 7,219, which is 965 more than the final total of the last convention. So far, 1,207 railway men registered in the Mechanical Division, which is 199 more than the gross of last convention. The Purchases & Stores Division has also shown an increase. Below is given comparative figures for the last four conventions.

	1919	1920	1922	1924
Members, Mechanical, A. R. A. ....	636	875	999	1207
Members, Purchases and Stores .....		364	376	427
Special guests .....	899	785	907	1066
Supply men .....	2153	2575	2290	2666
Railroad ladies .....	572	798	1008	1178
Supply ladies .....	546	676	573	675
Totals .....	4806	6073	6153	7219

## Shop Crafts Employees Inspect Exhibits

THE EXHIBITION at Atlantic City was on Tuesday enabled to round out its functions in a most satisfactory, though unexpected, manner by an opportunity to extend the courtesies of the pier to the Association of Shop Crafts Employees, Eastern Region, Pennsylvania System. This association has been holding its fourth annual convention at Philadelphia on June 16 and 17, and in response to the inquiry of its officers as to the possibility of its being able to inspect the exhibit in a body, secretary Conway and the appropriate committee of the R. S. M. A., not only extended a most cordial welcome, but provided each of the members of the association the privileges conferred by the usual guest badge, giving them the privileges of the pier for inspection and entertainment until the close of the exhibit on June 18.

The association in a body, numbering about 180 members, with ladies, arrived in Atlantic City at 12:30 p. m., and after a reception by Mayor Bader and lunch at the Hotel New England, proceeded to the pier. The members of the association spent the afternoon in inspection of the imposing display of machine tools and other appliances, and the ladies were entertained at the usual afternoon functions of music, dancing and tea in the Entrance Hall of the pier.

The party was in charge of T. H. Davis, general chair-

man of the association, and E. C. Arnold, vice-general chairman. The general chairmen of the several subdivisions of the association are: T. L. Fleming, general chairman, Blacksmiths; J. J. McBride, Machinist; W. W. Cline, Boilermakers; P. M. Hughes, Electrical Workers; E. C. Arnold, Sheet Metal Workers; E. W. McClain, Carmen.

Mr. Davis reports a most successful convention of the Association of Shop Crafts Employees of the Eastern Region. This is the fourth annual convention. The officers are elected biennially and there is no election this year. A vote of confidence, however, was voted to the present administration and as a mark of appreciation Mr. Davis was given a generous purse, with which to purchase a radio set. Incidentally he has headed up the organization from its beginning. Many matters of importance were discussed at the convention, the most outstanding of which was the seniority question. After lengthy discussion it was voted to indorse the present practice which is based on a point system rather than on time of service.

Mr. Davis has recently spent much of his time in Washington in connection with the Howell-Barkley labor bill.

## Committee on Committees

THE GENERAL COMMITTEE of the Mechanical Division at the close of the session yesterday, held a brief meeting and appointed the Committee on Committees for the coming year. This consists of John Purcell, assistant to the vice-president, Atchison, Topeka & Santa Fe, Chairman; L. K. Silcox, general superintendent of motive power, Chicago, Milwaukee & St. Paul; J. S. Lentz, master car builder, Lehigh Valley; J. T. Wallis, chief of motive power, Pennsylvania; and C. F. Giles, superintendent machinery, Louisville & Nashville.

## Early Order for Boiler Plate

THE LUKENS STEEL CO. has in its booth the original order of which a copy follows, the specially interesting points of which are the date, March 31, 1825, and the doubt expressed in the postscript as to the possibility of rolling a plate for a boiler head 2 ft. 10 in. diameter in one piece. The boiler head which the Lukens Company has in its present exhibit is just short of 16 ft. diameter. The letter reflects the Quaker affiliations of the company and its customers and is as follows:

"Doctr. Charles Lukens: York 3m 31, 1825.

Respected Friend:

"Thy letter of 2m 21 states that thou wilt deliver sheat iron to me in York at \$140 per ton rolled 2 feet wide and from 7 to 10 feet long.

"I presume the small variation from these dimensions in the following bill, will not alter the price therefore please send on as soon as thou canst the following—I cannot well state the quantity in square feet, will therefore say

350 feet in length & 2 feet wide.


58 feet in length & 2 feet 1 in. wide.

30 feet in length & 1 foot 11 in. wide.

438 feet running measure all rolled exactly to the small gauge or 1/12 of an inch thick except 6 sheets of the 2

feet width rolled to fit the large gauge or  $\frac{1}{8}$  of an inch thick. The iron to be of the best quality and sound, and particularly clean of buckles or bilges that prevent the sheet from lying flat.

"Also send 120 straps or hoops 7 feet long 3 in. broad and rolled to fit the large gauge or  $\frac{1}{8}$  of an inch thick, these dimensions must be strictly attended to. These hoops I want of the best picked iron as the are to be turned to a right angle along the middle from end to end,

so that the end shows this form . If the iron is not sound and very tough it will crack along the corner.

"It is understood that the sheets are to be nicely trimmed sides and ends. The money will await thy order in York Bank on the delivery of the iron as above described. Write me on the subject and say when I may certainly expect the iron.

Respectfully,

"Jno. Elgar."

Please return the gauge with the iron."

The following is a postscript to the same letter:

"Doctor Charles Lukens: Please to send us with J. Elgar's iron 6 sheets 4 feet 9 in. each in length 2 feet wide, 4 sheets 4 feet 5 in. each in length 20 in. wide.

"The above is to be  $\frac{1}{4}$  of an inch thick, also send us one sheet to make a boiler head 2 feet 10 inches diameter and  $\frac{3}{8}$  of an inch thick.

"If you cannot roll it in one sheet trim it out of two allowing for the lap in the middle. Yours & Frank Gartner for Davis Gartner & Webb."

The do not seem disposed to take 4d nails the iron will weigh 40 Cwt. perhaps.

J. E.

## Welding Men Hold Meeting

A MEETING CONDUCTED by the American Welding Society was held in the Greek Temple on the pier at three o'clock yesterday afternoon. It was presided over by H. S. Mann, Metal & Thermit Corporation. H. D. Vought, secretary of the Master Boiler Makers' Association, said that fusion welding was now one of the features of mechanical department work. Every railroad man interested in welding, he said, should be a member of the American Welding Society.

H. W. L. Porth, master car builder, Swift & Company, said that expansion in the use of fusion welding was at first too rapid. The process was considered a panacea; now welders know pretty well what can and cannot be done and welding is regaining its lost prestige.

A. H. Eager, general superintendent of motive power and car equipment, Canadian National, stated that he was not a welding man but that he is vitally interested in the results that can be obtained by gas, electric and thermit welding. He described briefly the practices now in use on the Canadian National and said there was a need for further standardization of welding materials. In reply to one of his questions, Mr. Vought told of the code of rules which is now being prepared and will be presented at the next annual meeting of the Master Boiler Makers' Association.

Earnest Lunn, electrical engineer, The Pullman Company, upon request outlined the applications of welding as used by The Pullman Company. Welding, he said, is now a large factor with this company and has come to stay.

E. B. Curry, welding supervisor, Chicago, Milwaukee & St. Paul, expressed the opinion that the American Weld-

ing Society should be of great assistance to the railroad welders in solving their everyday problems, and told of the need of establishing processes for each of the many different applications of welding work. He also said that there should be a standard method of marking welding material. This, he said, was not of vital importance in large terminals but he told of instances at smaller points where material got mixed, with unfortunate results.

C. A. McCune, past president of the American Welding Society said that the marking of welding material is being considered by the society and methods for doing this were being prepared and should be finished before the next meeting of the Mechanical Division.

E. Wanamaker, electrical engineer, Chicago, Rock Island & Pacific, spoke of pioneer work in welding. In his opinion little is understood about welding and its possibilities, but all of the processes have proved their usefulness. Supervisors, he said, are of prime importance and the standardization of processes is difficult and will require much systematic effort. The Association of Railway Electrical Engineers, has been asked to make up a manual on processes. This will be so prepared that it can be changed as practices are improved. It will include only electric welding, this can only be accomplished with the co-operation of the Master Boiler Makers' Association, the Bureau of Locomotive Inspection, and other bodies interested in electric welding. Similar work, he said, should be done for other kinds of welding. In his opinion, the American Welding Society can do its best work by selecting methods which have proven satisfactory and the merit of which can be backed by indisputable evidence.

W. L. Fanning, works manager, Australian Oxygen & Industrial Gases, Ltd., Melbourne, Australia, said that he was visiting the United States for the purpose of obtaining information on welding, because the welding art in Australia had not been advanced to the same degree that it has here. He is a representative of the Victorian Oxy-acetylene Association, and hopes to develop a relationship with other welding associations in the world. His association is faced with the same problems as those in this country; one of the greatest needs in the welding field at the present time is systematic technical education. Mr. Fanning told how welding is taught in the technical schools of Australia. Originally, he said, these schools had no standard course, which fact caused a large amount of confusion; this was finally corrected by the association outlining a course which was accepted by the schools. He concluded his remarks by asking for correspondence with other associations interested in this subject.

The meeting was concluded by Mr. McCune. He mentioned the fact that this was the second meeting of welding men held at Atlantic City during annual meetings of the Mechanical Division and pointed out that about 20 per cent. of the members of the American Welding Society are railroad men. He expressed the hope that the society would ask for a co-operative meeting with the Mechanical Division. He showed how such a meeting would be of particular value as the work of the Welding Society is largely scientific, while railroad work is of necessity intensely practical. By way of explanation he told how standards developed by the welding society have been adopted for the welding of unfired pressure vessels. He expressed the hope that technical committees of the welding society will be called in to co-operate with American Railway Association and Association of Railway Electrical Engineers' committees.

Members of the welding society present, by motion, extended a vote of thanks to the Mechanical Division for extending the privilege of the meeting room and for the spirit of co-operation which has been shown.



# Registration, American Railway Association

## Division V—Mechanical

Anderson, F. W., G. F., Penna.  
Baynes, Peter T., Equip. Insp., Penna., Crescent Inn.  
Beaumont, H. A., G. F., B. & O., Ellwood.  
Bennett, W. H., Ret. M. M., Penna.  
Butt, F. W., Asst. Eng., N. Y. C., Runnymede.  
Buttrick, G. H., Insp., N. Y. C.  
Caples, M. J., V. P., S. A. L., Ambassador.  
Colwell, F. G., Supt. Shops, N. Y. C. & St. L., Ritz-Carlton.  
Cramer, C. B., M. M., Wash. Term'l.  
Dolan, J. T. W., Sec. to V. P., S. A. L., Ambassador.  
Egan, J. P., M. M., N. Y. N. H. & H., Princess.  
Fildes, F. K., Asst. Eng., Penna.  
Helligren, T. R., Asst. Mech. Insp., C. B. & O., Fairmount.  
Hemingway, T. A., G. C. F., D. & H., Traymore.  
Hofmann, K. E., Asst. Eng. Tests, Penna., Schlitz.  
Kadel, B. W., Brighton.  
Kent, F. S., G. C. I., Penna., Marlborough.  
Kullman, B. M. M., U. M. & P.  
Lantime, J. P., Insp. M. P. Dept., L. I., Elberon.  
McAllister, J., G. F., N. Y. C., Ambassador.  
Mason, E. F., Asst. M. M., Penna. System, Chalfonte.  
Maxwell, H. W., G. F., N. Y. N. H. & H., Princess.  
Moorehouse, J. W., Elec. Supvr., P. & R., Dennis.  
Mura, Robert F., G. C. F., A. C.  
Murray, E. A., Shop Supt., C. & O.  
Quinn, M. H., M. C. R., Erie, Pennhurst.  
Reid, John, Supt. of Shops, N. Y. N. H. & H., Ambassador.  
Rhodes, R. S., Asst. Eng., N. Y. C., Runnymede.  
Roquemore, J. P., S. M. P., I. & G. N., Chalfonte.  
Shearer, L. D., Supt. Tele., P. & R.  
Sheridan, P. F., G. F., N. Y. N. H. & H., Clarendon.  
Shull, C. O., Asst. M. M., Penna.  
Smith, B. T., G. F., Penna.  
Stanton, E., Ch. Joint Car Insp., N. & P. Belt Line, Osborn.  
Taylor, C. P., Elec. Eng., N. & W., Marlborough.  
Temple, L. E., Mech. Engr., I. & G. N., Chalfonte.  
Trotter, C. E., Asst. M. M., N. Y. C. & St. L., Breakers.  
Voorhees, Paul, Res. Eng., P. & R.  
Weight, G. C., G. C. I., Penna., Sterling.  
Wood, A. J., Prof. Mech. Eng., Penna. State College, Arlington.  
Woodward, F. S., Eng., N. Y. C.  
Yergy, John P., G. F., Penna.

## Division VI—Purchases and Stores

Abel, A. W., Storekeeper, Penna.  
Anderson, K. J., Asst. G. S., Cuba R. R., Shelburne.  
Anderson, K. P., Stores Insp., Penna., Jerome.  
Annis, Fred L., Storekeeper, B. & M., Colonial.  
Arndt, John W., Asst., P. & R.  
Ballinger, A. L., Storekeeper, Penna.  
Barron, C. M., P. A., Cuba R. R., Shelburne.  
Benn, C. T., Asst. Storekeeper, Penna., Monticello.  
Beyer, Linwood B., Asst. to P. A., P. & R.  
Blasie, J. F., Dist. Storekeeper, N. Y. C., Lexington.  
Brain, B. B., P. A., K. C. S., Shelburne.  
Breene, J. C., G. S., N. C. & St. L., Princess.  
Brinton, E. R., G. S., C. & O., Ambassador.  
Britt, T. E., Div. Storekeeper, B. & O., Shelburne.  
Bosler, Martin C., Storekeeper, P. & R.  
Bossert, W. S., Stationery & Commissary Agt., Penna.  
Blomquist, C. A. G., Stores Acct., C. of Ga., Chalfonte.  
Bower, W. C., Mgr. P. & S., N. Y. C., Ritz-Carlton.  
Breene, J. G., G. S., N. C. & St. L., Shelburne.  
Brown, James H., Storekeeper, C. N. R., Chelsea.  
Burke, W. T., Storekeeper, C. R. I. & P.  
Burns, Ed. B., Div. Storekeeper, N. Y. N. H. & H., Pennhurst.  
Burns, E. J., Trav. Storekeeper, A. T. & S. F., Haddon Hall.  
Rush, H. O., Gen. Lum. & Tie Insp., Erie, Ambassador.  
Byron, J. E., G. S., B. & M., Colonial.  
Cann, A. T., P. A., Live Poultry Trans. Co., Shelburne.  
Carpenter, W. P., Storekeeper, F. E. C., Princess.  
Cavenaugh, C. I., Storekeeper, A. C. L., Morton.  
Chambers, C. B., Storekeeper, Penna., Franklin.  
Chandler, J. E., G. S., D. & I. R., Chalfonte.  
Cherry, C. P., Trav. Storekeeper, Penna., Traymore.  
Clay, Wilson J., Asst. G. S., P. & R.  
Cleveland, F. P., Div. Storekeeper, L. V., Monticello.  
Clewett, C. W., Coal & Lumber Agt., Penna.  
Clinger, G. E., Storekeeper, Penna., Jerome.  
Colbert, J. T., P. A., C. P. & S., Marlborough.  
Cooper, W. H., Storekeeper, P. & R.  
Crowley, M. D., Trav. Storekeeper, N. Y. N. H. & H., Craig Hall.  
Curtis, D. C., Storekeeper, C. M. & St. P., Haddon Hall.  
Dale, A. R., G. S., F. E. C., Princess.  
Davidson, W., G. S., I. C., Dennis.  
Deane, L. F., Ch. Cl. to P. A., B. & A., Seaview.  
Deery, James, Asst. to P. A., Penna., Traymore.  
Dewart, H. M., P. A., C. V., Ambassador.  
Dibble, C. C., Gen. Supvr. Stores, N. Y. C., Ambassador.  
Dittoe, W. P., P. A., N. Y. C. & St. L., Princess.  
Dixon, W., Insp. Stores, M. P., Breakers.  
Donegan, O. A., Gen. Stores Acct., B. & M., Colonial.  
Dunbar, A. P., Storekeeper, B. & M., Colonial.  
Duncan, H. R., Insp. of Stores, C. B. & O., Traymore.  
Durboraw, A. H., Off. Mgr. P. & S., Penna.  
Ector, W. L., Storekeeper, C. of Ga., Chalfonte.  
Elder, S. M., Lumber Agt., B. & O., Strand.  
Ellenberger, E. A., Stores Insp., Penna.  
Endy, William N., Storekeeper, P. & R.  
Enscoe, John R., Supt. Recl. Plant, N. Y. N. H. & H., Knickerbocker.  
Farraday, C. L., Gen. Matl. Agt., Penna., Traymore.

Farrell, W. K., Asst. P. A., Am. Loco. Co., Traymore.  
Fenimore, C. C., G. S., Pac. Elec., Traymore.  
Fisher, O. D., Storekeeper, Penna., Princess.  
Fleck, H. L., Spec. Utility Agt., Penna., Traymore.  
Foley, John, Forester, Penna., Ambassador.  
Forster, J. A., Storekeeper, Penna., Hanover.  
Foster, Hal D., Storekeeper, C. B. & O., Breakers.  
Fowler, J. B., Storekeeper, Penna., Wellsboro.  
French, H. A., Asst. Storekeeper, A. J. & E. F., Lewis.  
Friedlin, T. H., Ch. Lumber & Tie Insp., N. Y. C., Ritz-Carlton.  
Galloway, W. S., P. A., B. & O., Strand.  
Gann, J. C., Insp. of Stores, M. P., Ambassador.  
Garnett, J. E., Storekeeper, Southern, Breakers.  
Gerber, J. W., G. S., Southern, Breakers.  
Gilbert, H. K., Storekeeper, A. C. I., Chalfonte.  
Gillespie, W. A., G. S., L. & A., Rio Grande.  
Given, W. J., Storekeeper, M. & O., Haddon Hall.  
Goodloe, J. T., Trav. Storekeeper, Southern, Breakers.  
Graham, R. K., Supt. Recl., A. T. & S. F., Ambassador.  
Green, S. C., Storekeeper, L. V., Monticello.  
Greer, G. H., Asst. to P. A., M. & O., Haddon Hall.  
Grier, G. W., Storekeeper, Southern, Breakers.  
Griffith, B. W., G. S., M. C., Traymore.  
Griswold, W. W., P. A., W. & L. E., Haddon Hall.  
Guild, L. V., P. A., O. S. L., Traymore.  
Hall, C. B., Asst. to G. P. A., Penna., Haddon Hall.  
Harris, R. C., G. S., Penna., Traymore.  
Harris, Sydnor, G. S., R. F. & P., Dennis.  
Harrison, R. C., P. A., Manufacturers Ry. Co., Haddon Hall.  
Hart, Benj. C., Storekeeper, N. Y. N. H. & H., Shelburne.  
Haynes, W. H., Store Insp., P. & R.  
Heazlett, B. Y., P. A., Ky. & Ind. Tcr., Traymore.  
Heidenreich, C. F., Dist. Storekeeper, N. Y. C., Breakers.  
Henderson, V. L., Ch. Cl. G. S., S. A. L.  
Hitz, C. D., Spec. Agt., Penna.  
Hodges, T. A., Storekeeper, S. A. L.  
Hoffman, L. T., Trav. Storekeeper, U. P., Ambassador.  
Holmes, A. M., P. A., L. & H. R.  
Howatt, R. H., Div. Storekeeper, A. T. & S. F., Ambassador.  
Hughes, E. H., G. S., K. C. S., Shelburne.  
Hughes, E. H., G. S., K. C. S., Shelburne.  
Hull, Frank A., Trav. Storekeeper, N. Y. N. H. & H., Dennis.  
Hunker, W. G., Storekeeper, C. R. I. & P., Breakers.  
Jeffries, W. E., Asst. Ch. Cl., B. & O., Strand.  
Jessup, K. H., Insp. of Stores, C. R. I. & P.  
Johnson, V. E., Trav. Storekeeper, D. L. & W., Bothwell.  
Jones, Edward, Asst. P. A., W. M., Traymore.  
Kelly, C. H., Storekeeper, L. & V., Monticello.  
Kelly, T. F., Storekeeper, N. Y. N. H. & H., Traymore.  
Kemmerling, B. B., Storekeeper, Penna., Princess.  
Kilmer, L. V., Ch. Stores Acct., G. T., Ambassador.  
King, J. V., Asst. G. S., A. C. L., Morton.  
Kinnear, F. H., P. A., C. N. R., Chalfonte.  
Knabb, Samuel E., P. & R.  
Koehler, L. G., Div. Storekeeper, B. & O.  
Kreglon, A. F., Storekeeper, Washington Term., Chalfonte.  
Krumm, C. W., Storekeeper, M. P., Breakers.  
Landis, John D., P. A., P. & R., Haddon Hall.  
Lane, R. H., Ch. Matl. Insp., Southern, Glaslyn-Chatham.  
Layton, James L., Stores Insp., Penna., Fredonia.  
Lehrsch, G. H., Storekeeper, Penna., Monticello.  
Lieber, G. W., Supt. Reclamation, M. K. & T., Strand.  
Lodholz, Edward G., Storekeeper, P. & R.  
Longsdorf, C. D., Asst. G. S., N. Y. C., Breakers.  
Lorenz, G. W., Tie and Timber Agt., U. P., Ambassador.  
Lynch, J. F., Storekeeper, C. of N. J., Brady.  
Mahoney, J. E., Supt. Stores, C. & O., Traymore.  
Mahl, F. W., Dir. of Pur., S. P., Ritz-Carlton.  
Mann, C. A., Req. Marker, Penna.  
Marsh, E. S., G. S., W. & L. E., Haddon Hall.  
McCann, Thomas, Div. Storekeeper, P. & R., Martinique.  
McCormick, Francis R., Storekeeper, P. & R.  
McGill, C. H., Storekeeper, N. Y. N. H. & H., Traymore.  
McKaig, W. J., Storekeeper, L. V., Monticello.  
McKead, C. H., P. A., Penna., Pennhurst.  
McKelligon, A. S., G. S., S. P., Traymore.  
McQuilkin, H. P., G. S., B. & O., Seaside.  
Miller, W. A., Storekeeper, Southern, Breakers.  
Mills, O. B., Stationery Storekeeper, Penna.  
Minter, O. H., Storekeeper, A. B. & A., Atglyn.  
Moehle, C. F., Acct., B. & O., Breakers.  
Moffatt, W. C., G. S., D. & H.  
Moffatt, W. C., G. S., L. & H.  
Morrison, W., Storekeeper, L. I., Marlborough.  
Mulroy, J. R., G. S., Pullman Co., Dennis.  
Munn, A. J., Storekeeper, G. N., Elberon.  
Murphy, F. A., Dist. Storekeeper, B. & O., Shelburne.  
Murphy, T. J., Asst. to P. A., B. & O., Strand.  
Murrin, C. H., I. C., Breakers.  
Naylor, V. R., Storekeeper, S. P., Keystone.  
Nelson, O., G. S., U. P., Ambassador.  
Neumann, B. A., Storekeeper, Penna.  
Newman, F. C., Trav. Storekeeper, Southern, Breakers.  
Newman, J. F., Storekeeper, Penna., Hanover.  
Newton, E. S., Storekeeper, G. C. & S. F., Haddon Hall.  
Nicodemus, E. H., Stores Insp., Penna., Jerome.  
O'Dea, J. T., P. A., P. & U., Ambassador.  
Oldenbittel, N. V., Storekeeper, A. C. L., Morton.  
Orndorff, J. R., Storekeeper, B. & O., Schlitz.  
Paar, H. A., Dist. Storekeeper, M. C., Breakers.  
Painter, Chas. R., Asst. to G. P. A., N. Y. N. H. & H., Ritz-Carlton.  
Peck, F. A., Dist. Storekeeper, M. K. & T., Strand.  
Pemberton, H. V., Storekeeper, N. Y. N. H. & H., Ambassador.  
Portlock, W. M., G. S., S. A. L.  
Quarles, J. L., Storekeeper, N. Y. N. H. & H., Shelburne.  
Quigley, C. V., G. S., Ann Arbor, Princess.  
Rainie, H. M., Ch. Matl. Cl., B. & M., Haddon Hall.  
Rank, G. G., Supr. Pur. Dept., Penna.  
Ray, H. C., Stores Insp., Penna., Haddon Hall.  
Reuthinger, C., Dist. Storekeeper, M. K. & T., Strand.  
Riley, A., Asst. P. A., N. Y. O. & W.  
Rishards, G. T., Asst. Storekeeper, C. M. & St. P., Fredonia.  
Rieth, C. E., Storekeeper, C. R. I. & P., Breakers.  
Reinehr, John, Dist. Storekeeper, C. M. & St. P., Mt. Vernon.  
Remaley, F. H., Div. Storekeeper, B. & O., Schlitz.

Rivers, D. B., Dist. Storekeeper, C. M. & St. P., Mt. Vernon.  
 Robertson, D., Asst. G. S., C. N. R., Haddon Hall.  
 Rock, D. E., Stores Insp., Penna., Jerome.  
 Ruston, W. E., Storekeeper, B. & M., Colonial.  
 Sanders, E. H., G. S., C. C. & St. L., Traymore.  
 Schultz, Geo. H., Coal Agt., Penna., Traymore.  
 Schuncke, G. W., P. A., Baltimore Steam Packet Co., Ritz-Carlton.  
 Schuetz, Leonard, Storekeeper, Penna., Wellsboro.  
 Scott Glenn W., Trav. Storekeeper, M. K. & T., Strand.  
 Secor, G. A., G. S., C. & A., Haddon Hall.  
 Shank, H. T., P. A., L. & N., Traymore.  
 Sheridan, Charles H., Storekeeper, N. Y. C., New England.  
 Shipley, Benjamin, Storekeeper, Penna.  
 Sickel, S. R., Ch. Cl. Pur. Dept., P. & R.  
 Sidey, William J., Storekeeper, B. R. & P., Ambassador.  
 Simons, W. L., Storekeeper, B. & M., Colonial.  
 Slater, E. W., Storekeeper, A. C. & Y., Sterling.  
 Smith, H. A., P. A., Ter. R. R. Assn. of St. L., Ritz-Carlton.  
 Smith, Montgomery, P. A., Penna., Chelsea.  
 Snyder, G. W., 2d. Asst. to Stores Mgr., Penna.  
 Sowell, A. W., Div. Storekeeper, Ambassador.  
 Spratlay, J. A., Storekeeper, Indpl. Union, Kentucky.  
 Stackhouse, R. J., G. S. P. & R., Marlborough.  
 Stackpole, W. S., G. S., Public Service, Haddon Hall.  
 Steeder, L. L., Storekeeper, M. P., Breakers.  
 Stevens, H. C., G. S., Wabash, Breakers.  
 Stevens, M. W., Div. Storekeeper, C. N. R., Princess.  
 Stevens, R. T., Sales Agt., B. & O., Strand.  
 Stoddard, C. J., Scrap Cl. B. & O., Strand.  
 Stuart, J. G., G. S. K. B. & O., Haddon Hall.  
 Sutton, C. G., Storekeeper, B. & O., Schlitz.  
 Stout, H. D., Storekeeper, P. & R.  
 Stover, R. G., Storekeeper, P. & R.  
 Sullivan, E. A., Storekeeper, Penna., Craig Hall.  
 Sweeney, J. H., Supt. Stores Dept., Erie, Princess.  
 Tallmadge, G. E., Asst. G. S., G. N., Breakers.  
 Therrell, G. H., G. S., G. M. & N., Gulf, Mobile & Northern, Haddon Hall.  
 Thompson, L. C., Mgr. Stores, C. N., Chalfonte.  
 Tobey, C. B., G. S., L. V., Shelburne.  
 Toomey, John J., A. R. A. Insp., A. & W. P., Schlitz.  
 Trudel, J. A., Div. Storekeeper, N. Y. N. H. & H., Ambassador.  
 Tucker, A. L., Asst. G. S., C. & N. W., Haddon Hall.  
 Updegrave, W. G., P. A., W. & N., Gage.  
 Urtel, E. J., P. A., B. & S., Marlborough.  
 Vizer, D. E., Storekeeper, B. & A., Haddon Hall.  
 Walsh, P. H., G. S., A. C. L., Morton.  
 Watkins, John W., Trav. Storekeeper, L. V., Monticello.  
 Watson, R. P., Div. Storekeeper, C. of Ga., Haddon Hall.  
 Webb, E. E., Storekeeper, Penna., Princess.  
 Weedon, R. E., Supt. Shops, Southern, Knickerbocker.  
 Whalen, T. F., Div. Storekeeper, N. Y. N. H. & H., Clarendon.  
 Whanger, S. A., Storekeeper, C. & O., Breakers.  
 White, G. D., Storekeeper, Penna., Traymore.  
 Wilkinson, A. S., Asst. Storekeeper, R. F. & P., Dennis.  
 William, W., Trav. Storekeeper, N. Y. C., Breakers.  
 Williams, C. B., P. A., C. of N. J., Traymore.  
 Williams, R. C., Insp. of Stores, Penna., Haddon Hall.  
 Woodruff, J. T., Timber Agt., L. & H. R.  
 Workman, E. A., Dist. Storekeeper, B. & O., Haddon Hall.  
 Yeomans, G. G., Haddon Hall.  
 Young, A. H., Tie & Timber Agt., S. A. L., Ritz-Carlton.  
 Young, C. D., Stores Mgr., Penna., Brighton.  
 Zimmerman, H. J., Storekeeper, Penna., Traymore.  
 Zimmerman, J. W., Div. Storekeeper, Wabash, Breakers.

Cady, E. E., Sheet Metal, Penna.  
 Casale, C. T., Machinist, Penna., New England.  
 Casto, Geo. D., St. Charles.  
 Chapin, E. S., Safety Insp. Ins. Dept., Penna.  
 Chelins, Leo, For., P. & R.  
 Clark, John, For., B. & M.  
 Claudy, Chas., G. C. I., G. T. W., Blenheim.  
 Cline, Walter G., Conductor, C. of N. J.  
 Clipsham, J. C., Car Insp., Penna.  
 Colbert, A. F., Blacksmith, Penna.  
 Coffey, J. E., Pass. Equip., C. of N. J., Lyric.  
 Cook, C. A., Ret. For., Penna.  
 Conway, H. B., Electrician, Penna., New England.  
 Corson, G. S., For. Painter, N. Y. C., Louvain.  
 Cox, A. B., Carman, Penna.  
 Cox, W. E., Electrician, Penna.  
 Crawford, E. E., Blacksmith, Penna., New England.  
 Critchfield, W. F., Trav. Pass. Agt., C. M. & St. P., New England.  
 Crooks, J. G., Electrician, Penna.  
 Culver, L. G., Elect., Penna.  
 Cunningham, T. F., Acct., Penna.  
 Dailey, Jerry, For., C. of N. J., Brady.  
 Davis, T. H., Boilermaker, Penna., New England.  
 Deibert, E. L., Car Insp., P. & R.  
 Deith, W. H., Blacksmith, Penna.  
 De Ment, W. A., M. C. B. Acct., Live Poultry Transit, Shelburne.  
 DeTurck, Franklin J., Asst. For., M. P. & R. E., P. & R., Grand Atlantic.  
 Dice, Agnew T., Jr., Supt., P. & R., Ritz-Carlton.  
 Dill, W. G., Machinist, Penna., Marlborough.  
 Dix, Chas. L., Boiler Insp., Penna., New England.  
 Dornsife, R. A., Draftsman, P. & R.  
 Dougherty, Carl, Penna.  
 Dougherty, John Blacksmith, Penna.  
 Downs, M. D., For., Penna., Haddon Hall.  
 Drew, G. W., For., L. I., Dennis.  
 Duer, W. T., Plumber, Penna.  
 Ebert, W. J., Mach. Helper, Penna.  
 Egolf, H., Ch. Cl. M. P., P. & R., Silverton.  
 Elliot, S. E., Sheet Metal Worker, Penna., New England.  
 Ellis, D. S., Draftsman, N. Y. C.  
 English, J. B., For., Penna.  
 Evans, Samuel J., Fireman, P. & R.  
 Fanning, W. L., Australian Representative, Marlborough.  
 Fariss, E., Div. C. I., N. & W., Marlborough.  
 Fendley, H. E., Blacksmith, Penna.  
 Ferrel, W. H., Elect., W. J. & S. S.  
 Fisher, C. D., Machinist, Penna.  
 Fitzimmons, T. J., Blacksmith, Penna.  
 Fleming, T. L., Gen. Ch. Blacksmiths, Penna.  
 Flinn, F. T., Asst. Pass. Tr. Master, Penna.  
 Flowers, S. R., For. Car Dept., A. C., Kentucky.  
 Follette, A. G., Supv. of Stores, Penna.  
 Forkes, G., Blacksmith, Penna.  
 Forner, O., Asst. R. F. of E., C. of N. J.  
 Fowler, John B., Jr., Wellsboro.  
 Frantz, H. G., Electrician, Penna.  
 Fresse, Harvey L., Asst. Fore., P. & R., Stanley.  
 Freund, H. J., Trav. Fireman, C. of N. J.  
 Frey, C. C., Electrician, Penna., New England.  
 Fuller, William J., Asst. For., N. Y. C., Louvain.  
 Gangwere, E. P., Insp., P. & R.  
 Garrett, R. P., Route Agent, Am. Ry. Exp. Continental.  
 Gehris, Wilson E., Coach Insp., P. & R., Glickman.  
 Gilbert, P. R., Machinist, Penna.  
 Glassman, William, Car Insp., Penna.  
 Gleason, Joseph, Asst. For., L. I., Elberon.  
 Gordon, H. D., Machinist, Penna., New England.  
 Graff, R. H., Elec. Eng., N. Y. C.  
 Graney, W. F., Boiler Insp., Penna., New England.  
 Grant, P. H., Mech. Supt., Federal Tank Line.  
 Graves, J. R., Trav. Insp., N. Y. C.  
 Grellet, C. A., Carman, Penna.  
 Gretter, J. J., Federal Tank Line.  
 Griffin, M. H., Boiler Insp., L. I., Thayermore.  
 Grindall, W. H., For., Penna.  
 Grove, S. M., Boiler Insp., Penna.  
 Grove, Wm. E., F. C. S., P. & R., Craig Hall.  
 Gunn, Chester A., Shop Track Insp., K. & I. T., Osborne.  
 Haag, Chas. M., Cl. M. P. Dept., P. & R.  
 Haenchen, Robt. B., Asst. For., P. & R.  
 Hall, Geo. W., Boilermaker, Penna., New England.  
 Hamilton, E. R., Asst. Train., P. & R., Edison.  
 Hammond, A. V., Sheet Metal For., Penna.  
 Harkinson, I. C., Electrician, Penna., New England.  
 Harriman, N. F., Vice Chair. Spec. Board, Chalfonte.  
 Harrington, Geo. W., Chair. Shop Craft., Penna.  
 Harris, R. H., Asst. Ch. Cl., D. L. & W., Sterling.  
 Hartman, F. J., Elect. Draftsman, W. J. & S. S.  
 Hassler, H. G., For. Steel Car Shop, Penna., New England.  
 Heberling, J. E., Boilermaker, Penna.  
 Heiser, Geo. W., Draftsman, P. & R.  
 Heiser, L. F., Draftsman, P. & R.  
 Henderson, E. M., Boilermaker, Penna.  
 Henry, E. J., Blacksmith, Penna.  
 Herbert, John H., Asst. to P. A., B. & O.  
 Higgins, George J., Gen. For., N. Y. N. H. & H., Strand.  
 Higgins, Wm., Electrician, Penna.  
 Hillier, F. S., Tie & Timber Agt., N. K. P., Strand.  
 Hill, E. S., For., Penna.  
 Hirsch, Wm., Buyer, Penna.  
 Hoenig, J. A., Mech. Ins. Air Dept., N. Y. C., Arlington.  
 Hoffman, C. W., Traffic Mgr., Emmons Coal Mining Co., DeVille.  
 Hoffman, Paul L., Ambassador.  
 Holland, H. L., Draftsman, B. & O., Louvain.  
 Hollengreen, A. B., Upholsterer, Penna., New England.  
 Horne, R. F., U. S. Navy, Craig Hall.  
 Hosfies, C. A., Stenog., B. & O.  
 Hotchkiss, J. A., Machinist, Penna.  
 Houlihan, D. J., R. H. F., D. L. & W., Sterling.  
 Hughes, P. M., Gen. Chairman, Elec. Workers, Penna., New England.  
 Humelsin, G. T., Carman, Penna.  
 Hunter, Thomas, Asst. For., P. & R.  
 Hutchison, J. B., Spec. Rep., Penna., Sterling.  
 Irving, F. N., For., C. of N. J.  
 Jacobs, George D., Train Rider, P. & R.  
 Jamison, W. D., St. Charles.  
 Jenkins, A. G., Machinist, Penna.

## Special Guests

Abel, N. W., Car Repairman, Penna.  
 Achenbach, G. A., Draftsman, P. & R.  
 Alexander, Nathaniel, For. Elect., Atl. City.  
 Allinson, J. L., Asst. For., P. & R., Traymore.  
 Althouse, Victor D., P. & R.  
 Amer, H. J., W. J. & S. S.  
 Anderson, O. L., Supvr. Water Softener Plants, A. C. L., Princess.  
 Ardell, C. L., Electrician, Penna.  
 Armstrong, W. E. F., Test Bureau, B. & O., Eastbourne.  
 Arnold, E. C., Plumber, Penna.  
 Ashenfelter, G. H., For. Pur. Dept., Penna.  
 Atkinson, Harold C., Val. Insp., P. & R.  
 Baker, R. S., Sheet Metal, Penna.  
 Bank, W. V., For., W. J. & S. S.  
 Barry, W. V., Plumber, Penna.  
 Bechtel, George, Coppersmith, Penna., New England.  
 Behl, J. C., Rel. Power Dir., W. J. & S. S.  
 Beith, Jr., A., For. Elec. Tract., Penna.  
 Benecke, Louis F., Stationer, P. & R.  
 Bentley, W. F., Wheel Insp., B. & O., Pennhurst.  
 Bickel, Oliver, A., Draftsman, P. & R.  
 Bittle, George C., For. Car Shop, P. & R.  
 Bixby, O. M., Draftsman, N. Y. C., Runnymede.  
 Blank, Jacob P., L. V., New Brady.  
 Blossom, H. F., Ch. Draftsman, N. Y. C.  
 Roeck, J. R., Asst. For., Penna.  
 Bollinger, J. M., Blacksmith, Penna.  
 Bond, Winfield S., For., Penna., Elwood.  
 Bookhammer, R. W., Machinist, Penna.  
 Borland, W. P., Dir. Bureau of Safety, I. C. C., Elberon.  
 Bover, Henry E., Asst. For., P. & R.  
 Bower, David M., Draftsman, P. & R.  
 Boyer, H. A., Car Shop For., P. & R.  
 Bradley, E. J., For., Penna.  
 Brady, W. E., Sys. Acct., A. T. & S. F., Haddon Hall.  
 Brand, C. J., For., Penna.  
 Britz, Walter, Mech. Asst., Pullman Co., Chelsea.  
 Broadney, R. A., Electrician, Penna.  
 Broome, Edwin F., Tr. Mast. Cl., P. & R.  
 Bruffey, B. W., Shop Insp., B. & O., Craig Hall.  
 Brumbach, Ray S., Elec. Tel. Dept., P. & R.  
 Buchmiller, Chas. C., Asst. For., P. & R.  
 Buckley, Thomas F., For., P. & R.  
 Buller, F. E., Draftsman, Penna.  
 Burgdorf, G., For., N. Y. C.  
 Buzzard, E. Y., Insp., P. & R.



- Johnson, C. Barney, Insp., Penna., Knickerbocker.  
 Johnson, E. S., Pres., Davenport Loco Works, Dennis.  
 Jones, B. R., Ch. Draftsman, N. Y., N. H. & H., Stevenson.  
 Jones, Ed., Blacksmith, Penna.  
 Journey, J. F., Boilermaker, Penna.  
 Kaslean, Emil, Appr. Inst., Erie.  
 Kearns, J., Machinist, Penna.  
 Kehler, Ralph B., Asst. For., P. & R., Norwood.  
 Keller, J. N., Machinist, Penna., New England.  
 Kelley, G. W., For., C. of N. J., Sterling.  
 Kelley, P. G., R. H. F., Penna.  
 Kennedy, W. G., Cl. Pur. Dept., Penna.  
 Kerns, A. U., Shop Insp., Penna.  
 Kight, H. R., M. P. Insp., W. M., Monticello.  
 Kiley, L. R., Pullman Co., Chelsea.  
 Kimbel H. C., Supvr. Mach. & Appr., C. of N. J., Sterling.  
 King, John H., Cl., P. & R.  
 King, W. D., Blacksmith, Penna.  
 Kirk, E. B., Asst. M. C. B., Sinclair Ref Co.  
 Kleine, H. J. W., Spec. App., Penna., Dennis.  
 Kleinspehn, Arthur, Asst. For., P. & R.  
 Klett, G. W., Plumber, Penna., New England.  
 Kline, W. R., Penna.  
 Kling, O. M., Boilermaker, Penna.  
 Knorr, R., Div. Car For., Penna., Arlington.  
 Knouse, W. N., Sheet Metal Worker, Penna.  
 Krieg, G. A., Asst. For., L. I., Wiltshire.  
 Ladd, Geo. T., Brighton.  
 Laird, Elwood P., Elec. Tel. Dept., P. & R.  
 Laird, H. B., Tinsmith, Penna.  
 Landers, W. J., Blacksmith, Penna., New England.  
 Lang, A., Auditor's Office, M. K. & T., Royal Palace.  
 Larvie, Lionel, C. N. R., Shelburne.  
 Lee, A. L., For., C. of N. J., Lyric.  
 Le Fager, S. W., Req. Marker Pier Dept., Penna.  
 Lenich, Chas. R., Asst. For., P. & R.  
 Lidle, C. J., For. Car Insp., A. C.  
 Linson, Chas. N., Cl. Pur. Dept., P. & R.  
 Lipman, Michael, Div. Eng., Penna.  
 Lloyd, S. H., Blacksmith, Penna.  
 Lodge, Jos., Car For., Penna.  
 Lotz, Harry B., Jr., Penna., Byron.  
 Lotz, James F., Byron.  
 Luckenbill, Isaac A., Asst. For., P. & R.  
 Lyons, G. E., For., Penna.  
 McCarthy, Edw. A., Machinist, Penna., New England.  
 McClintock, E. F., Master Carpenter, Penna.  
 McComb, Jr., Thomas, For., Penna.  
 McDonald, Chas. F., For., Penna.  
 McDonald, W. G., For., Penna.  
 McDowell, J. C., Asst. For., L. I., Elberon.  
 McFarland, I. A., Blacksmith, Penna.  
 McGill, C. H., N. Y., N. H. & H., Traymore.  
 McHugh, C. J., Gang For., Penna.  
 McKelvey, R. A., Machinist, Penna., New England.  
 McKirgen, C. H., Penna.  
 Macklin, J. A., Carman, Penna., New England.  
 Mancher, Chas., For., L. I., Breakers.  
 Manger, John T., For., P. & R., Dennis.  
 Mapes, Edward, Penna.  
 Markey, H. J., Shop For., Penna.  
 Marshall, C. V., For., Penna.  
 Marshall, O. A., For., Penna.  
 Martin, G. L., Cl. N. Y. C., Princess.  
 Martin, L., Act., B. & O., Knickerbocker.  
 Martin, R. B., Electrician, Penna.  
 Martin, W. H., Asst. For., P. & R.  
 Massey, G. R. H. F., C. of N. J., Wellsboro.  
 Mast, G. A., Mech. Asst., Pullman Co., Chelsea.  
 Mayberry, G. W., Derrick Engineer, Penna.  
 Mayne, Harry W., P. & R.  
 Mechlin, Ernest T., Western R. R. Assn., Brighton.  
 Metz, C., For., Penna.  
 Miller, W. J., For. Penna., Jerome.  
 Mills, A. S., Blacksmith, Penna.  
 Minter, Robert.  
 Moll, John B., Insp. Engineman, P. & R., Worthington.  
 Montgomery, E. S., Secy. G. P. A., N. Y., N. H. & H., Ritz-Carlton.  
 Moore, Tom, Ret. P. A., Virginian, Chalfonte.  
 Mulrine, J. F., For., Penna., Continental.  
 Mundt, G. A., N. Y. C., Princess.  
 Musser, W. H., Boiler Maker, Penna.  
 Myers, J. J., Gang For., Penna.  
 Neumann, Alto.  
 Norris, J. C., For. Car Shop, Penna.  
 Oberly, B. J., Machinist, Penna.  
 O'Boyle, T. F., Cl., P. & R.  
 O'Brien, Denis, Asst. For., L. I., Breakers.  
 Odell, Louis, For., N. Y., N. H. & H., Atglen.  
 O'Donnell, T. J., Ch. Interchange Insp., Niagara Frontier Car Insp. Assn.  
 O'Donnell, W. F., Chief Interchange Insp., Pennhurst.  
 O'Neil, D., Boilermaker, Penna.  
 Ostermayer, L. J., Cl. Pur. Dept., Penna.  
 Oswald, W. E., For., C. of N. J., Strand.  
 Ott, Frank, Elberon.  
 Paul, C. M., Shop Craft, Boilermaker, Penna.  
 Payton, J. E., Car For., K. C. S., Ambassador.  
 Peterson, O., Machinist, Penna.  
 Phelps, L. C., Machinist, Penna.  
 Phillips, C. R., Car Rep. For., Penna.  
 Phillips, J. P. H., Lubr. Cl., Penna.  
 Picker, Jr., K., Draftsman, B. & O., Louvan.  
 Plummer, A. M., For. Elec. Power Sta.  
 Post, C. E., Machinist, Penna.  
 Potts, Leroy C., Draftsman, P. & R.  
 Powers, M. W., Ch. Elect. B. & Aroostock, Palm.  
 Pratt, Joseph T., Supvr. of Safety, P. & R., Lyric.  
 Rader, Harry, Eng., C. of N. J.  
 Read, W. P., Machinist, Penna., New England.  
 Redfern, Hugh B., Spec. Agt., U. S. Supt. Commerce, St. Clair.  
 Reed, John, For., L. I., Marlborough.  
 Reedy, J. M., Shop Craft Boilermaker, Penna.  
 Reilly, J. S., Car Insp., Penna., New England.  
 Richards, D., Insp., W. I. & S. S.  
 Rick, R. C., R. H. F., Penna.  
 Rickley, Fred., For. Elect., P. & R.  
 Riley, W. M., Engineer, Penna., Chalfonte.  
 Rising, A. J., For., Penna.  
 Roach, J. E., For., N. Y. C., Arlington.  
 Robenolt, R. C., Blacksmith, Penna.  
 Roberts, Geo. S., Insp., Penna.  
 Rook, W. W., Car Repairman, Penna.  
 Rowe, John, Car Rep., Penna.  
 Royer, A. C., Buyer, Penna.  
 Runk, W. H., Pipe Fitter, Penna.  
 Runkle, David F., For. Car Shop, P. & R.  
 Rusling, W. J., Insp., Penna.  
 Russell, Edward G., P. & R., Bonair.  
 Russell, H. H., Sr., Penna.  
 Ryan, E. J., Asst. For., B. & O., LaMarne.  
 Sacks, H. Elwood, Dennis.  
 Sage, J. R., Electrician, Penna.  
 Sakers, R. C., Trans. Cl. Pier Dept., Penna.  
 Samuels, Jos., Leader of Orchestra.  
 Sanderson, H. M., Sec. to Pres., C. of N. J.  
 Schenkel, J. T., Div. Acct., W. & L. E., Ambassador.  
 Schilke, Harry, Elect., W. J. & S. S.  
 Schlaupitz, Henry, Ch. Cl. Elec. Dept., C. of N. J.  
 Schmehl, Harvey E., Car Insp., P. & R.  
 Schotta, C. V., Carman, Penna.  
 Schrode, Bartley A., For., P. & R.  
 Schwicker, W. J., For., L. I., Marlborough.  
 Seasholtz, R. E., Machinist, Penna.  
 Shaffer, F. I., N. Y. C., Traymore.  
 Shaffer, Luther M., For., P. & R.  
 Sharp, R. F., Jr., Pipe Fitter, Penna.  
 Sharpe, G. H., Machinist, Penna.  
 Sharpe, J. Vincent, P. & R.  
 Shaughnessy, T. J., Acct. K. & I. T., Osborne.  
 Shea, Frank J., For., N. Y., N. H. & H.  
 Shea, James A., Cr. Cl. to G. S., N. Y., N. H. & H., Traymore.  
 Shepard, J. B., Car Man, Penna.  
 Sheppard, F. C., Ch. Lubr. Cl., Penna.  
 Sheridan, Wm. F., Asst. For., L. I., Traymore.  
 Sherwood, D. C., For. Car Painter, N. Y. C., Arlington.  
 Sherwood, J. L., Trav. Car Rep. Acct., B. & O.  
 Shotts, H. I., Carman, Penna., New England.  
 Shute, M. F., Eng. Ret., W. I. & S. S.  
 Siesholtz, David, Steno. to S. M. P.  
 Sims, Harry, Pur. Dept., Penna.  
 Sindall, G. E. M., Asst. Gen. For., Penna.  
 Skillman, T. F., Pipe Fitter, Penna.  
 Smith, C. Ed., Stores Insp., Penna.  
 Smith, Don Y., Trav. Frt. Agt., P. & R.  
 Smith, Harry, Cl. Loco. Dept., P. & R.  
 Smith, Leon, Insp., Penna.  
 Smith, Newburn, Penna., Chelsea.  
 Smither, Col. H. C., Ch. Co-Ordinator.  
 Sneek, W. P., Boiler Insp., Penna., New England.  
 Snyder, Claude R., Draftsman, P. & R.  
 Snyder, I. J., Carman, Penna.  
 Speacht, C. W., Electrician, Penna.  
 Squires, E. O., Act. G. S., F. E. C., Stanley.  
 Stadelman, J. H., Asst. Eng., Penna.  
 Stake, N. S., Electrician, Penna.  
 Staples, Oscar L., For., Penna., Franklin.  
 Stellwagon, Wm. B., Asst. For., P. & R., Piedmont.  
 Stone, J. L., Asst. For., C. of N. J., Terminal.  
 Stout, Theo., Conductor, L. V.  
 Straus, D. F., Boilermaker, Penna.  
 Strunk, Albert S., E. H. F., P. & R.  
 Strunk, John H., R. H. For., P. & R.  
 Strunk, Warren H., Welder, P. & R.  
 Sullivan, Chas. J., Electrician, Penna.  
 Sumner, A. W., M. P. Insp., Penna.  
 Swatbough, C. W., Car Insp., Penna.  
 Sweeney, U. L., Asst. Ch. Cl. S. M. P., R. F. & P., Traymore.  
 Swenck, John A., Asst. For., P. & R.  
 Syling, E. C., Machinist, Penna., New England.  
 Timpson, J. E., Asst. For., L. I., Dennis.  
 Tindall, N., Boilermaker, Penna.  
 Tobins, Lawrence H., Draftsman, P. & R.  
 Tozer, H. G., Penna.  
 Truex, R. W., Trav. Fireman, C. of N. J.  
 Unger, J. J., Req. Cl., Penna.  
 Van Atten, L., Asst. For. Elec. Equip., N. Y. C.  
 Vandegrift, H. C., Pipe Fitter, Penna., New England.  
 Vandegrift, Harvey W., Asst. For., P. & R.  
 Van Sant, J. M., Test. Bureau, B. & O., Arlington.  
 Van Valkner, W. A., Boilermaker, Penna.  
 Vittum, J. E., Ch. Joint Insp., All Columbus Rys., Arlington.  
 Vyne, A. G., Foreman, Penna., Apollo.  
 Wahaven, R. T., Electrician, Penna., New England.  
 Walker, I. R., Penna.  
 Warren, Harold M., A. R. A. Bureau, B. & M., Chelsea.  
 Watkins, S. S., Strand.  
 Weber, Edwin B., For. P. & R.  
 Weber, Harry A., Asst. For., P. & R.  
 Weeks, Robert W., Gen'l. Stores Insp., Penna.  
 Weidenhamer, B. S., For., Penna.  
 Weigle, John, Ret. For., Penna., Elwood.  
 Wein, G. F., Jr., Electrician, Penna.  
 Whalen, D. B., Plumber, Penna., New England.  
 Whelan, J. E., For., L. I.  
 Whelan, J. J., Asst. Ch. Car Rep. Acct., B. & O., Knickerbocker.  
 Whitman, J. H., Cl. Stores Dept., Penna.  
 Widdoes, I. O., Stationery Clerk, Penna.  
 Wilby, Edward W., Headlight Insp., C. of N. J.  
 Wildes, R. W., Car Repairman, Penna.  
 Wilkes, G. C., Electrician, Penna.  
 Williams, G. D., Supvr., P. & R.  
 Williamson, G. B., Acct. B. & O., Kenerton.  
 Windt, W. B., Insp., Penna.  
 Wolfe, C. J., Contractor, W. M., Monticello.  
 Wood, R. D., Arlington.  
 Woodson, E. R., Sc. Ry. Acct. Off. Assoc., St. Charles.  
 Witherspoon, W. L., Con. Eng., Traymore.  
 Wrenshall, J. C., Eng. M. of W., P. & R.  
 Wold, Stephen H., For., P. & R.  
 Wyle, Bruce, Apprentice, P. & R.  
 Yocum, A. H., Sig. Enc., P. & R.  
 Young, R. H. A., Machinist, Penna.

## Conventionalities

Prof. A. J. Wood of State College motored down to the convention from State College, Pa., with Mrs. Wood and their son, Reginald. Mrs. Wood stopped off at Newark, Del., on Sunday while Prof. Wood and son came to Atlantic City Monday.

Frank Hedley, president of the Interboro Rapid Transit Co., of New York, played golf with the Macbarmma crowd on Saturday, and then spent a couple of days visiting with friends on the Pier and looking over devices that might be useful in the electric railway game.

W. D. Thompson, Hutchins Car Roofing Co., Detroit, Mich., who appeared this year as president of the company he has so long represented—in more recent years as first vice-president—left the convention on Monday, the immediate occasion of his early leaving being the approaching marriage of his daughter.

M. J. Caples, vice-president of the Seaboard Air Line, is one of the unusual number of executive officers who are here to attend the convention and look over the exhibits. Mr. Caples reports that business continues good in the Southeast and that the Seaboard's traffic is holding up very satisfactorily.

W. W. Darrow comes to the convention this year as president of the Camel Company, to which position he was promoted from vice-president in April, 1923, following the death of Percy M. Elliott, who died April 18, 1923. Mr. Darrow is accompanied by Mrs. Darrow. Mrs. Elliott also is among the convention visitors.

His name is H. A. Varney—V-A-R-N-E-Y—he is with the Sunbeam Electric Company, and he is an efficient member of the efficient Entertainment Committee. The *Daily* takes this pains to state the facts correctly, because a singular fatality has pursued our previous efforts to get Mr. Varney's name into print correctly.

T. J. Crowley, who is a nephew of P. E. Crowley, recently elected president of the New York Central, has left the service of that road and entered the railway supply business as the representative of the Handlan-Berck Manufacturing Co., his special department of this company's extensive line being that of signal lamps and lanterns.

What would a mechanical convention be without Carrs? It takes only three of the kind that are here to make a good train. Robert, Walter and George have been coming to the conventions for years; they are interested in many railway supply activities and if there are any three men here who are better known, the *Daily* doesn't know who they are.

T. H. Beacom, receiver of the Denver & Rio Grande Western, arrived yesterday and began at once a tour

through the exhibit. Mr. Beacom is an old Rock Island man. He first entered railway service on the Chicago, Milwaukee and St. Paul, but he became a trainmaster on the Rock Island in 1902 and rose to vice-president and general manager of that road in 1920. Mr. Beacom was enthusiastic about the big exhibit.

Vice-President H. R. Safford, of the Burlington, before leaving yesterday for his home in Chicago, expressed great admiration for the exhibit, which he said in every respect surpassed what he expected to see. This is the first mechanical convention he has attended. He said he had missed a good deal by not being here before, and that he could be relied upon to be here again. Mr. Safford was accompanied by his young son, "Bob," who is decidedly a "chip off the old block," and proud of it.

H. J. Forster, secretary of the American Railway Association, has returned to his home in New York, after visiting the convention a few days. Mr. Forster was elected secretary last spring, to succeed J. E. Fairbanks, who died very suddenly in February. Mr. Fairbanks was general secretary of the A. R. A. for several years, and he and Mrs. Fairbanks were visitors to several conventions. Mr. Forster has been connected with the A. R. A. for a long time and was assistant secretary before his recent promotion.

The entertainment committee regrets exceedingly that it was unable to put over the roller skating feature which it had promised as a part of the evening entertainment on Monday. In preparing the floor for skating purposes it was necessary to sprinkle it with rosin, which would have seriously interfered with subsequent dancing, and the manager of the skating team refused to allow the use of the mat ordinarily used in such exhibitions. The fact that the skaters "tuned up" early in the evening was taken as conclusive that the number was filled and the announcement so made prior to the actual event.

The Bradford Corporation is a new name among the list of exhibitors at the Mechanical Convention. Something like twenty years ago three men—Horace Parker, Fred A. Poor and Burton Mudge, each established a business, each of which in its own line came into a prominent position. The Bradford Draft Gear Co. has been for years known at the mechanical conventions. The P. & M. Co. and Mudge & Co. have been known more intimately in connection with The American Railway Engineering Association, The Roadmasters' Association and other organizations dealing with roadway and track material. They have now come together in a combination under the name of The Bradford Corporation, which includes since January 1 of this year the activities of what was formerly The Republic Railway Supply Co. and its predecessor, The Joliet Railway Supply Co. In addition to Messrs. Parker and Mudge, the corporation is represented at the convention by A. F. Struebing, chief engineer; W. W. Rosser, C. A. Carscadin, Harry F. Lowman, Floyd K. Mays, Walter Doering, J. C. Keene and Geo. W. Bender, of the sales division of the organization, who are acting as *liaison* officers in establishing the status of the new corporation. It has been said that "an institution is but the lengthened shadow of a man." The present combination seems to be triply significant as the lengthened shadows of three men, supported by the perhaps less conspicuous shadows of many more strong men.



## New Devices Among the Exhibits

### Rivet Driving Record

ONE OF the new Ingersoll-Rand 6-B riveting hammers on exhibition, has a record of driving 4080 rivets by two gangs, in ten hours. This was on a Southern Pacific job, flat bottom gondola cars and the work was done at the plant of the Ralston Steel Car Co., at Columbus, Ohio. The sizes and numbers of rivets were  $\frac{7}{8}$ -in., 136 rivets;  $\frac{3}{4}$ -in., 1020 rivets;  $\frac{5}{8}$ -in., 2924 rivets.

### Brake Beam Support and Safety Arm

A RECENTLY developed four-point brake beam support and safety arm is being exhibited by the Davis Brake Beam Company, Johnstown, Pa. This support is an integral unit, no part of which is applied to the brake beam.

The simplicity of the device is evident, not only in its construction but also in its attachment to the truck. For this it is only necessary to arrange for two rectangular holes in the web of the spring plank along its center. The central loop of the arm is inserted through the spring plank opening and compressed sufficiently to allow for the placing of the interlocking gib. After the gib is in place, the initial load in the arm will take care of all ordinary flexures. No bolts, nuts, rivets, pins or cotters are required.

Another feature is the flexibility of the longarm. This is desirable at the time the support is called on to play the part of a safety arm, making it less liable to fracture than more rigid arms.

### Light and Power Plant for Railroad Service

A SMALL LIGHT and power plant, applicable for such service as lighting outlying stations and as an auxiliary for signal power supply, is on exhibition for the first time in Atlantic City, at the booth of the Westinghouse Electric & Manufacturing Company. The plant is built for developing either 32 or 110-volt current, with or without storage battery. The units are made in four different types. The type E-30 is a 750-watt, 32-volt plant, driven by a single cylinder  $1\frac{1}{2}$ -h. p. four-cycle, valve-in-head air cooled gasoline engine. The E-60 is a 1500-watt, 32-volt, 3-h. p. unit. The E-63 and 66 are made for 110-volt service.

A feature of these plants is their simplicity of construction, with consequent ease of operation. The units have no switchboard, gages, fuel pumps, oil pumps or any parts that require adjustment or the operation of which is hard to remember. Another point of interest in these units is the fact that the fuel tank is built into the base of the plant. This means safety from fire and no loss of fuel by leakage.

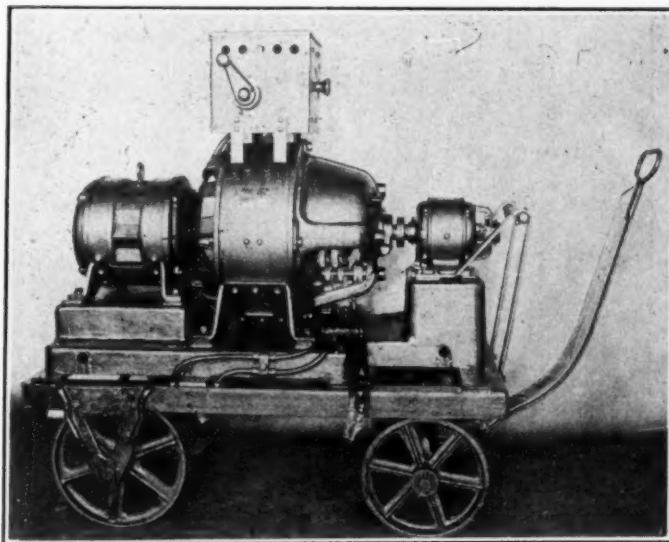
Several railroads have found these plants desirable in locations where electricity is not available or where a stand by service is desirable.

### Westinghouse Welding Set

A ONE-MAN portable arc welding set has been developed by the Westinghouse Electric & Manufacturing Company which is compact, extremely rugged and has a wide range of current control.

It consists essentially of three direct-connected machines and a control box all mounted centrally on a four-wheel truck. It has a 10 h. p. 200/440-volt, three-phase induction motor running at 1750 r. p. m. There is also a 5 kw., 25-volt, 200-amp. welding generator; the exciter is a  $1\frac{1}{2}$  kw. compound wound 125-volt direct current generator. The current rating of the exciter is four amperes while the maximum current it is required to furnish is 2 amperes. The machine is therefore twice as large as necessary and this is done to provide a small machine which is as rugged and of as good design as the larger ones.

The main shaft of the set runs in ball bearings and



The Welding Set Is Ruggedly Built and Has a Wide Range of Current Control

is 3 in. in diameter. This large size is used to prevent possible injury to the machine by the shock and strain of suddenly applied loads. The exciter is also a ball bearing machine connected to the main shaft by a flexible coupling. The control panel is totally enclosed and mounted on top of the generator where it is easily accessible and not liable to injury. It contains the motor starter, the welding current control rheostat and a voltmeter and ammeter to show the generator output. The current output of the generator can be varied by the rheostat in 61 steps from 60 to 300 amperes. Regulation is inherent. The open circuit voltage is 70 volts maximum. The one-hour current rating of the generator is 200 amp. with a 50 deg. temperature rise while the continuous rating is 186 amp. Unusually good ventilation is principally responsible for the small difference. Cast cover plates are used to protect the armature and brush rigging and all steel parts of the brush rigging are sherardized to prevent rusting.

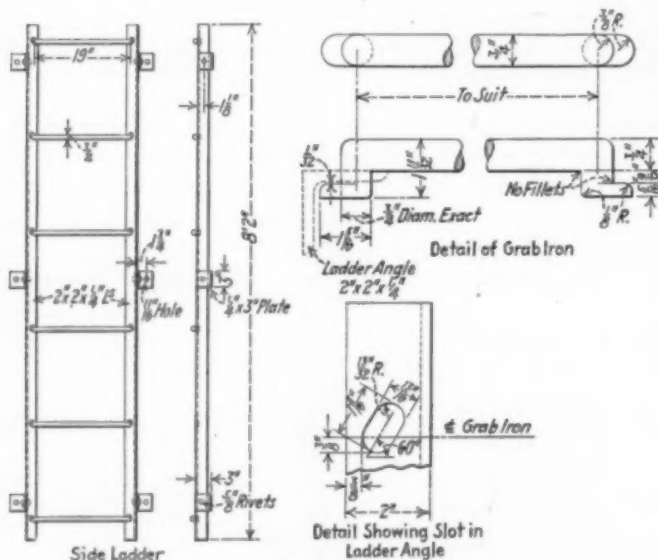
Extra leads are brought out from the motor so that it can be used on either 220 or 440-volt circuits. The complete outfit including the truck weighs 1850 lb.

## Metal Ladder For Box Cars

**A** METAL LADDER for refrigerator and other house cars is being exhibited by the Union Railway Equipment Company, Chicago, Ill. This ladder is designed so that the treads are locked into the side rails without the use of rivets and are said to be built so substantially that they are stronger than the usual method of riveted treads.

If one of the treads is distorted or requires removal, it is only necessary to remove the nuts from the bolts securing the clips on one side, allowing one rail to drop down as low as it will go and then any tread can be removed easily without disturbing the others.

This ladder avoids the necessity for putting the usual



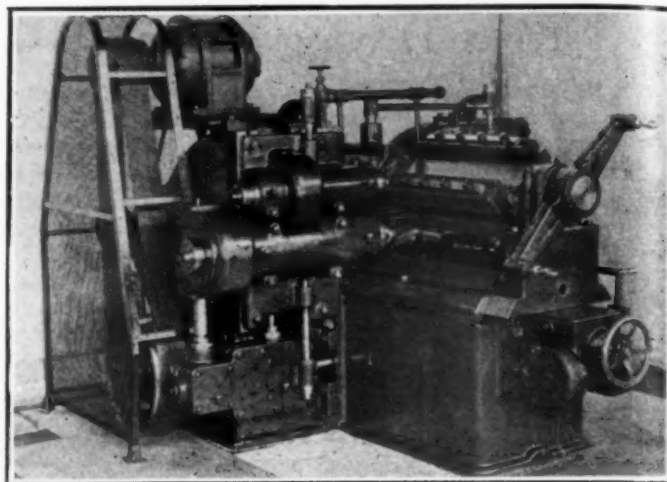
The Treads of this Ladder are Locked into the Side Rails Without Riveting

number of bolts where individual treads are bolted to the car, which is an advantage in the case of refrigerator cars. The slots provided in the side rails for the treads are at an angle of approximately 45 deg. and when the tread foot is in the same position it can be easily slipped out.

## Machine For Reclaiming Splice Bars

**O**NE of the new developments of the Rockford Milling Machine Company, Rockford, Ill., which is being exhibited, is a machine for reclaiming splice bars. The bars are clamped to a horizontal turret as shown in the illustration, which operates at a speed of 6 in. per minute. This machine is capable of reclaiming a pair of bars in six minutes. One of the features of this machine is that the work is kept clean and when the turret is indexed, there is no need of the operator having to brush falling chips from the face of the bars being machined. High speed cutters five inches in diameter are used for removing the metal which amounts to approximately 42 cu. in. of steel in the reclamation of one pair of bars. The machine is driven by a 20 horsepower constant speed motor running at 1200 r. p. m. A belt is used to transmit power from the motor to the main drive pulley. The spindles are driven by a hardened steel worm gear running on roller bearings and all of the drive shafts run in

ball bearings. The diameter of the lower spindles, of which there are two, is 5 in. and the diameter of the upper spindle is 4 in. An arbor is used on the lower spindle which carries two cutters. The cutters operate at a per-



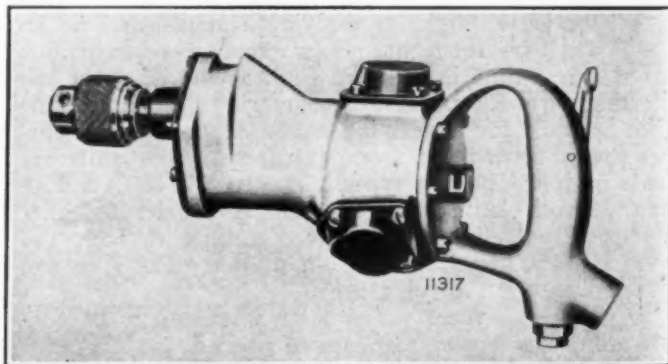
A Machine Which Will Reclaim a Pair of Splice Bars in Six Minutes

pheral speed of 80 ft. per minute. The feed screws are 2 1/4 in. in diameter. The upright spindles are driven by spiral double gears which roll in heavy grease. Both the feed and speed gears are interchangeable, the feed being driven by a roller chain. The machine is equipped with a pump having a capacity of 100 quarts of lubricating liquid per minute. The machine weighs approximately 1,200 lbs.

## Ingersoll-Rand Telltale Drill

**T**HE INGERSOLL-RAND COMPANY, New York, is exhibiting a new design of pneumatic drill, known as the No. 6, designed primarily for drilling staybolt telltale holes.

Several unusual features of construction are embodied in this tool. It is a three-cylinder machine having a counterbalanced crank shaft, which reduces vibration to a minimum and practically eliminates the breakage of



No. 6 Ingersoll-Rand Telltale Drill

drills for this cause. The three cylinders are interchangeable and renewable. It is only necessary to take out three cap screws on the outside of each cylinder to remove it. The distribution valve, instead of being separate and operated by eccentrics, is made as a part of the crank shaft and contains the inlet and exhaust ports for all three



cylinders. The radical changes in the design of individual parts and the machine as a whole makes possible the elimination of about 50 per cent of the parts ordinarily found in the four-cylinder type of drill.

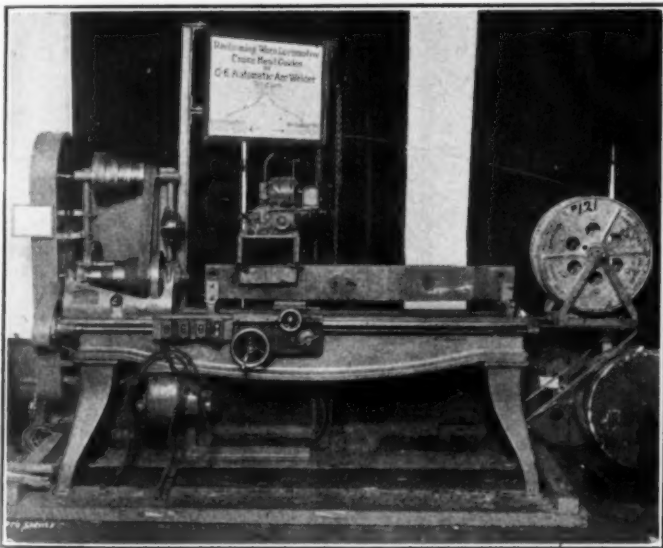
The drill chuck will take drills up to  $\frac{3}{8}$ -in. diameter. Pistol grip construction is standard although the machine can be furnished with breast plate or screw feed. The weight of this drill is nine pounds.

## Cost of Automatic Welding of Crosshead Guides

**T**HE AUTOMATIC arc welding process as applied to the building up of worn locomotive guides is being exhibited by the General Electric Company, Schenectady, N. Y.

There are seven practices in vogue in the railroad shops of the country by which crosshead guides are taken care of when worn down to the condemning limit. They are as follows: First, run with loose guide as long as possible and then scrap the guide; second, use shims to take up the slack and when the limits of shimming have been reached, scrap the guide; third, cut a recess in each side of the guide and insert a strip of steel which is bolted to the guide; fourth, forge and cut down the guides of larger sizes to make guides of smaller sizes; fifth, building up the worn surface by welding on manganese bronze; sixth, building up the worn surface by electrically welding on steel by hand, and seventh, using an automatic arc welding machine to deposit steel on the worn surface.

The first six methods of taking care of worn guides are familiar in every detail to those handling this class of work. The process of rebuilding guides by the auto-



Automatic Electric Welding of a Crosshead Guide

matic arc welding machine is somewhat new. Actual cost data of putting metal back on the guides by the electric welding process are given below.

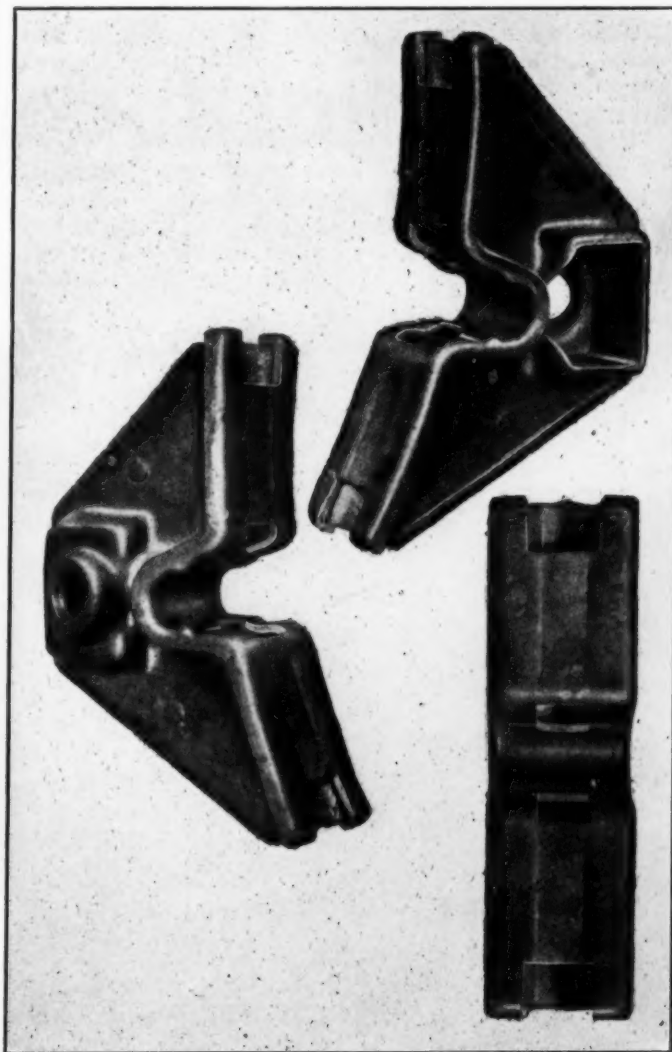
FOUR GUIDES RECLAIMED BY THE AUTOMATIC PROCESS:	
Labor, 12 hrs., at 78c .....	\$9.36
Electric power .....	2.40
Electrode, 28 lb. ....	2.53
Total, four guides .....	\$14.29
Total, one guide .....	3.57

The welding was applied on the side surface of the

guide covering a width of two inches, beginning the welding on the inside and laying down adjacent beads, working to the outer edge. Two layers of beads were required to build up the worn spot, a total of  $\frac{3}{8}$  in. on each side. This was then machined away  $\frac{1}{8}$  in. on each side, leaving a  $\frac{1}{4}$  in. finished built up stock. The length of the built up guide was five feet. A total of three hours was required for welding both sides using, 150 amp., and 20 volt across the arc and  $\frac{1}{8}$  in. diameter electrode wire.

## Pressed Steel Brake Head

**T**HE BUFFALO BRAKE BEAM COMPANY, New York, is exhibiting a pressed steel brake head which is made of a non-corrosive, copper content, open-hearth steel. A distinctive feature of this head is the face plate which is flanged over the top, bottom and sides, and riveted to the brake head side plates with countersunk rivets. The thickness of this plate is such that should a shoe be lost, the brake head can operate as a shoe for a



The Flanged Face Plate of the Buffalo Brake Head Affords a Wearing Surface in Case the Brake Shoe Is Lost

limited time without being ruined. Should the plate be worn out, a new one can be applied at slight expense without the necessity of dismantling the brake beam. This

construction tends to reduce the possibility of the head and toe lugs being ground off when a brake shoe is lost or worn out, thereby removing a source of many brake head failures.

## A Preservative for Treating Car Timbers

**A** PRESERVATIVE WHICH is new to this country and which permits of the working and painting of the timber after treatment has recently been put on the market by the American Wood Impregnation Corporation, New York. This company has secured the American rights for the manufacture and sale of the European preservative known as Wolman salts. These salts were developed in Germany where they have been in use for all forms of preservative treatment of timber since 1904. They are manufactured under the trade names of Fluoxith, Triolith, Tanalith and Minolith. The first-named has largely been superseded by Triolith, which is used for protection against wood-destroying fungi. Tanalith is a mixture of Triolith and arsenic salts and is used for protection against destructive insects as well as against fungi. Minolith is for use where special protection against fire is desired.

The method of applying these salts to timber is similar to that for applying creosote by the full-cell process, no final vacuum being used. After introduction into the wood, these salts apparently become fixed; tests on ties, mine and other timbers which have been in service for long periods indicating there is practically no leaching. The salts are

neutral and do not produce any reaction on iron. Additional characteristics which are of interest to car builders are that timber which has been treated with Wolman salts remains, to all appearances, in its natural state, and may be sawed, bored and planed for construction purposes and that the treated timber may be painted. Specimens of timber treated with Wolman salts, which have been in service, are being exhibited by L. S. & E. H. Walker, New York.

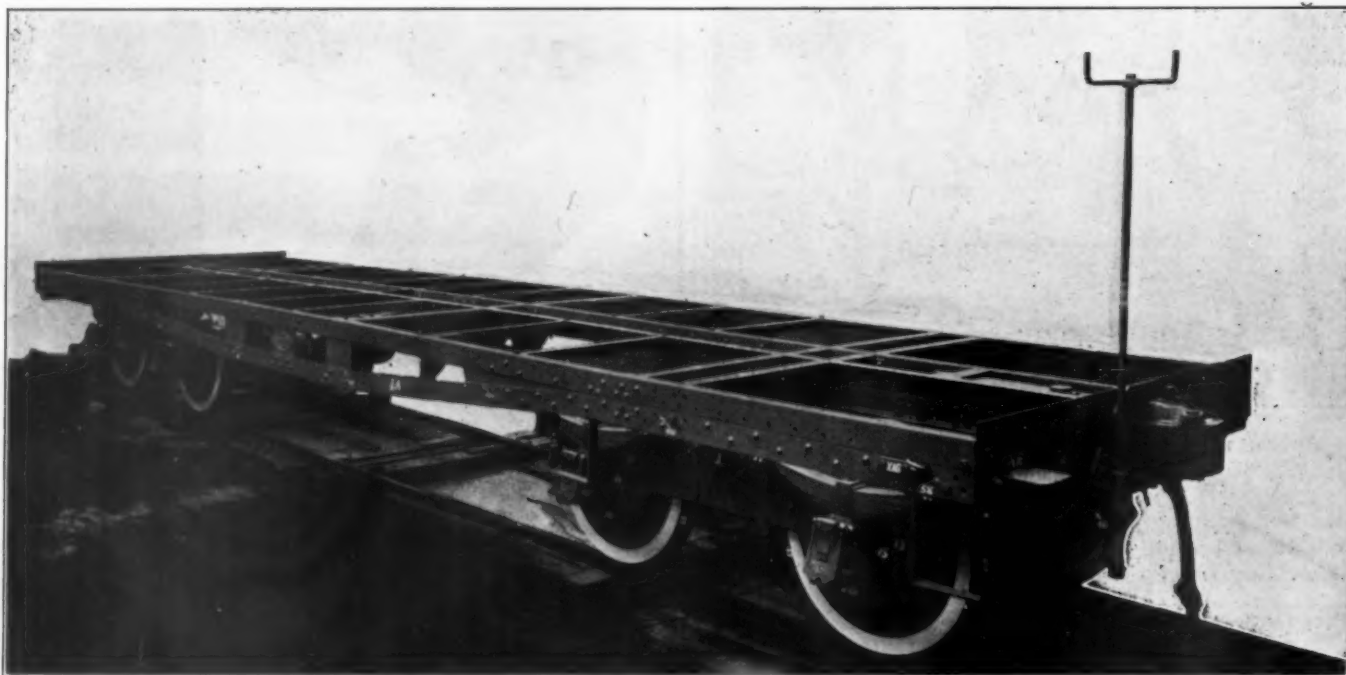
## Welding Material for Building Up Worn Surfaces

**H**IGH CARBON electrodes and gas welding rods made for building up worn surfaces on high carbon steel parts, such as battered rail ends, steel tires, buffer castings and switch points, are being shown for the first time at Atlantic City by The Page Steel & Wire Company.

When properly used, the metal deposited from the rods will show a carbon content varying from .60 to .80 with a corresponding scleroscope hardness varying from 30 to 37.

The gas welding rods are furnished in 36-in. lengths and in four sizes; 5/32 in., 3/16 in., 1/4 in. and 5/16 in. in diameter. The electrodes are supplied in the same sizes and in either 14 in. or 36 in. lengths. In direct current electric arc welding the high carbon electrodes are used on the positive side, where Page Armco electrodes are used on the negative side. The finished weld made with either the gas welding rods or electrodes may be ground, but is not readily machinable.

\* \* \*



Underframe Construction of 40-Ton Bogie Coal Wagon Built for the Chinese Government Railways, Pekin-Mukden Line, by the Metropolitan Carriage Wagon & Finance Co., Ltd., Oldbury Works, England